



MID-LEVEL  
HEALTH WORKER  
TRAINING MODULES

Student Text

# GENERAL CLINICAL:

## Trauma and Emergency







## THE MEDEX PRIMARY HEALTH CARE SERIES

After completion of extensive field trials in Micronesia and in primary health care programs in Lesotho, Guyana, Pakistan, and Thailand, the methods and materials of the MEDEX technology have been published as The MEDEX Primary Health Care Series. The Series provides a systematic, practical, adaptable format for management and training in new or existing primary health care programs at all levels.

The 35-volume Series is organized into three major categories of Management Systems Development

Materials, Mid-Level Health Worker Training Materials, and Community Health Worker Training Materials. The Series is appropriately balanced between promotive, preventive, and curative needs in primary health care.

The methods and materials of the MEDEX technology are suitable for national scale programs as well as smaller projects, and can be used in whole or in part as circumstances demand. One of the greatest strengths of the MEDEX technology is its flexibility and sensitivity to local conditions.

### VOL.

- 1** The MEDEX Primary Health Care Series: An Overview

#### **MANAGEMENT SYSTEMS DEVELOPMENT MATERIALS**

*The Systems Development Materials include a module for training management analysts, workbooks for use in analyzing management systems, and a manual for conducting district and national planning and management workshops.*

- 2** Student Text and Instructor's Manual Management Analysis Training Module  
**3** Drugs and Medical Supplies System Workbook  
 General Supplies System Workbook  
 Facilities and Equipment Maintenance System Workbook  
 Transportation System Workbook  
**4** Communication System Workbook  
 Personnel System Workbook  
 Finance System Workbook  
 Health Information System Workbook  
**5** District and National Planning and Management Workshops Manual

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*The Mid-Level Health Worker Training Materials, which can be adapted to the specific needs of a country, include procedures and materials for preparation of instructors, evaluation of trainees, preparation for the community phase of training, and development of a continuing education program. The materials ensure that students acquire the skills and knowledge they will need to provide primary health care services, to manage a small health facility, and to train community health workers.*

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- 7** Continuing Education Manual

- 8** Training Evaluation Manual

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- 16** Student Text **17** Instructor's Manual  
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 Dental, Eyes, Ears, Nose, and Throat

- 18, 19** Student Text **20** Instructor's Manual  
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- 23** Student Text **24** Instructor's Manual  
 Problems of Women  
 Diseases of Infants and Children  
 Child Spacing

#### **Health Center Management Modules**

- 25** Student Text **26** Instructor's Manual  
 Working with the Health Team  
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- 27** Student Text and Instructor's Manual  
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#### **Reference Manuals**

- 28** Formulary  
 Diagnostic and Patient Care Guide

- 29** Patient Care Procedures

- 30** Health Center Operations

- 31** Community Health  
**COMMUNITY HEALTH WORKER TRAINING MATERIALS**

*The Community Health Worker Training Materials are designed for training literate and non-literate community health workers to carry out specific tasks. The teaching approach emphasizes dialogue between trainer and trainee. Other methods employed include role demonstrations, stories, and extensive use of visual aids. The materials are geared to practical skill development through maximum interaction with the trainer. The workbooks emphasize promotive and preventive skills, but include selected basic curative skills as well.*

*The workbooks can be used to train new community health workers or to provide continuing education for existing community health workers. To prepare mid-level health workers to train community health workers, these workbooks are used along with the community health modules.*

- 32** Introduction to Training  
 Clean Water and Clean Community  
 Prevention and Care of Diarrhea

- 33** Healthy Pregnancy  
 Feeding and Caring for Children

- 34** Some Common Health Problems  
 Tuberculosis and Leprosy  
 First Aid

- 35** Community Learning Materials:  
 Health Problems in the Community  
 Caring for Your Child  
 Caring for Your Sick Child  
 Clean Home and Clean Community  
 Illustrations for Training Community Health Workers

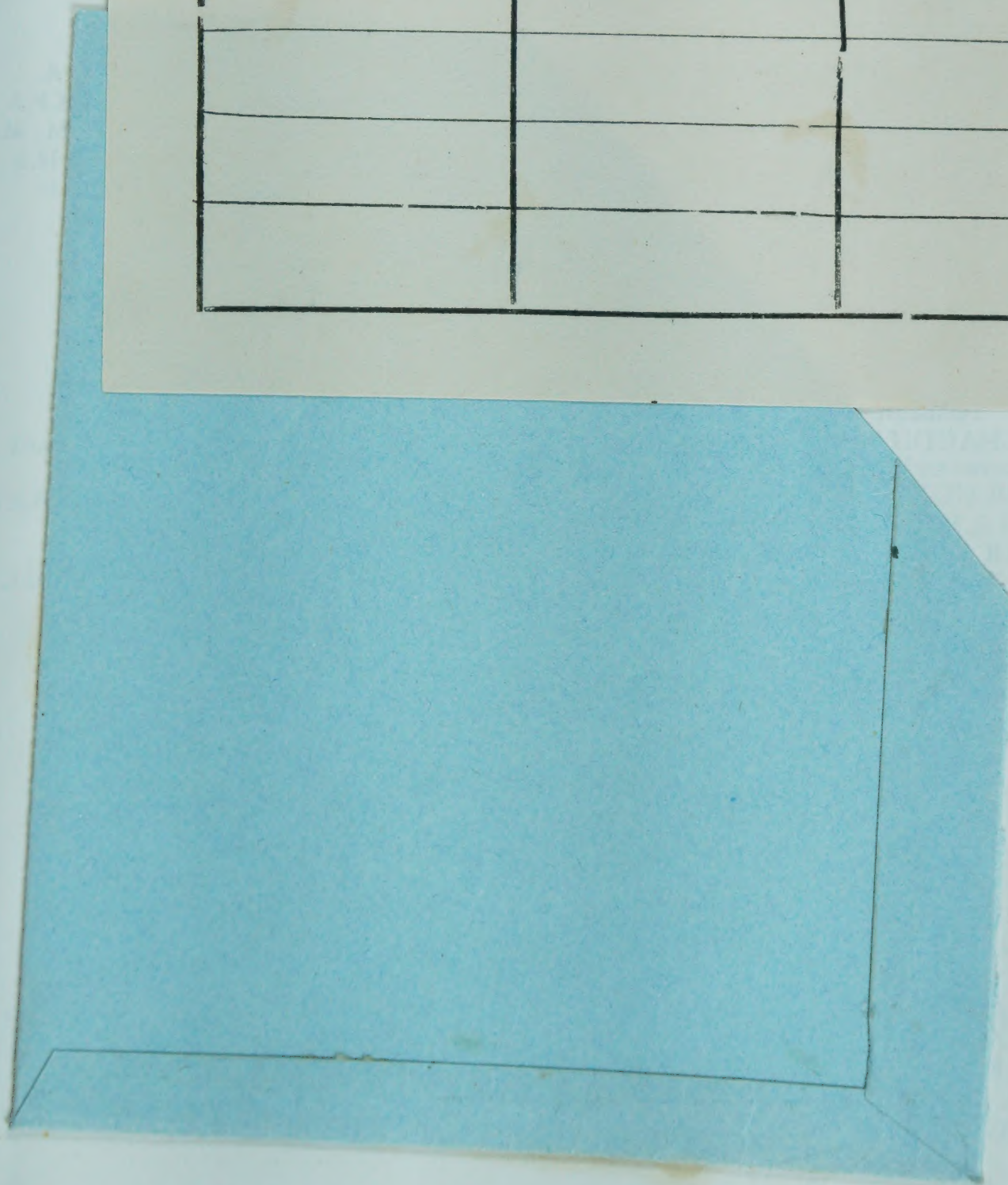
*To order books or to obtain further information on The MEDEX Primary Health Care Series, write The MEDEX Group, University of Hawaii, 1833 Kalakaua Ave., #700, Honolulu, Hawaii 96815-1561, U.S.A.*



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**The MEDEX Primary Health Care Series**

# **TRAUMA AND EMERGENCY**

Student Text

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# TASK ANALYSIS TABLE

Diagnosing, Treating, and Preventing Trauma and Emergencies

Work Requirements DUTIES	Training Requirements	
The MLHW will:  1. Take and record the medical history of all patients presenting in trauma or an emergency	SKILLS	KNOWLEDGE
	The MLHW trainee will show that he is able to:  1.1 Record a patient's presenting complaint  1.2 Question a patient or his relative about a trauma or emergency	The MLHW trainee will show that he knows:  1.2.1 How to question a patient or his relative about a trauma or emergency  1.2.2 Information needed to complete the medical history of a patient in an emergency:  Whether the patient started choking while he was eating Whether the patient suddenly collapsed Whether the patient, if he is a child, had any throat infection Whether the patient was exposed to hot gas or hot smoke Whether the patient was taking any drugs Whether the patient suffered any injury to his neck or face



<div> <div>Work Requirements</div> <div>DUTIES</div> </div>	
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<div> <div>Training Requirements</div> <div>SKILLS</div> </div>	<div> <div>KNOWLEDGE</div> <div> <p>Whether the patient was found in a closed room with a fire</p> <p>Whether the patient was found near or in contact with an electric wire</p> <p>Whether the patient was found in water</p> <p>How long the patient has been in shock</p> <p>Whether the patient was involved in an accident</p> <p>Whether the patient has vomited</p> <p>Whether the patient had diarrhea</p> <p>Whether the patient was burned</p> <p>Whether the patient had a recent injection</p> <p>Whether the patient was sick during the past week</p> <p>Whether the patient has any chronic disease</p> <p>Whether the patient suffered any head injury</p> <p>Whether the patient was drinking alcohol</p> <p>Whether the patient has been taking any drugs</p> </div> </div>
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<div>Work Requirements</div> <div>DUTIES</div>	<div>Training Requirements</div> <div>SKILLS</div>	<div>KNOWLEDGE</div>
		<p>What caused the patient to lose consciousness</p> <p>The time of a snake bite</p> <p>The kind of snake that bit the patient</p> <p>Whether the patient feels weak or has trouble speaking</p> <p>Whether the patient's urine has changed color</p> <p>Whether the patient has bled from his mouth or gums</p> <p>The time of a poisoning</p> <p>The type of poison swallowed</p> <p>The amount of poison swallowed</p> <p>Whether the patient vomited</p> <p>Whether the patient's vision is blurry</p> <p>Whether the patient feels pain in his mouth, throat, chest, or abdomen</p> <p>Whether the patient has had convulsions</p> <p>Whether the patient feels dizzy</p> <p>1.2.3 Information needed to complete the medical history of a patient with trauma:</p>



<div> <div>Work Requirements</div> <div>DUTIES</div> </div>	<div> <div>Training Requirements</div> <div>SKILLS</div> </div>	<div>KNOWLEDGE</div>
		<div> <div>How and when the patient was injured</div> <div>How long the patient was bleeding and how much blood he lost</div> <div>When the patient was bitten</div> <div>Whether the animal bit anyone else</div> <div>Whether the patient has feeling beyond the wound</div> <div>Whether the patient heard a snapping sound</div> <div>Whether the patient twisted a limb</div> <div>Whether the patient can move his limb at its joint</div> <div>Whether pain is felt from a burn</div> <div>Whether the patient is restless or thirsty</div> <div>Whether the patient lost his vision suddenly or gradually</div> <div>Whether the patient's head aches</div> <div>Whether the patient feels dizzy</div> <div>Whether the patient was unconscious</div> <div>Whether the patient's arms and legs feel weak</div> </div>



<div>Work Requirements</div> <div>DUTIES</div>	<div>Training Requirements</div> <div>SKILLS</div> <div>KNOWLEDGE</div>	
<div>2. Assess a patient in trauma or a life-threatening emergency</div>	<div>1.3 Record a patient's medical history</div> <div>2.1 Identify these signs of trauma and emergencies: Gagging Absence of respiratory effort Cyanosis</div>	<div>Whether the patient has trouble speaking Whether the patient's neck or back hurts Whether the patient can move his arms and legs Whether any part of the patient's body is numb Whether the patient is having trouble breathing Whether the patient feels pain when he coughs Whether the patient coughed up blood Whether the patient's abdomen hurts Whether the patient saw blood in his urine</div> <div>1.3.1 How to use medical history forms</div> <div>2.1.1 The anatomy and physiology of respiratory, cardiovascular, nervous, gastrointestinal, genitourinary, and musculoskeletal systems</div>



<div> <div>Work Requirements</div> <div>DUTIES</div> </div>	<div> <div>Training Requirements</div> <div>KNOWLEDGE</div> </div>
	<div> <div> <div>SKILLS</div> <div> <p>Anxiety and restlessness</p> <p>Cold and clammy skin</p> <p>Pallor</p> <p>Rapid and weak pulse</p> <p>Low blood pressure</p> <p>Rapid and shallow breathing</p> <p>Decrease in urine output</p> <p>Large, red welts on the skin</p> <p>Wheezing</p> <p>Decreased consciousness</p> <p>Dilated, pinpoint, or unequally sized pupils and the abnormal reaction of pupils to light</p> <p>Neck stiffness in an unconscious patient</p> <p>Tenting of the skin in an unconscious patient</p> <p>Bulging fontanelles in an unconscious patient</p> <p>Convulsions in an unconscious patient</p> <p>Black-and-blue skin around a bite</p> <p>Drooping eyelids and slurred speech</p> <p>Bleeding from the gums and mouth</p> </div> </div> <div> <p>2.1.2 The definition and explanation of the common physical signs associated with trauma and emergencies</p> </div> </div>



<div>Work Requirements</div> <div>DUTIES</div>	<div>Training Requirements</div> <div>SKILLS</div> <div>KNOWLEDGE</div>	
	<div> <div>Burns around the mouth</div> <div>Sweating and drooling</div> <div>Slow and shallow breathing</div> <div>Unusual odor on a patient's breath</div> <div>Spurting bright red blood</div> <div>Dark red blood</div> <div>Limited movement of a joint distal to a wound or bite</div> <div>Loss of sensation distal to a wound or bite</div> <div>Jagged cut</div> <div>Clean cut</div> <div>Puncture</div> <div>Deformity of a limb or joint</div> <div>Black-and-blue skin</div> <div>Reddened skin</div> <div>Oozing blisters</div> <div>White or charred skin</div> <div>Loss of vision</div> <div>Depression in the skull</div> <div>Watery discharge or blood from the nose or ears</div> <div>Paralysis of arms or legs</div> <div>Absent or decreased breath sounds</div> </div>	



<p>Work Requirements</p> <p>DUTIES</p>	<p>Training Requirements</p>	
	<p>SKILLS</p>	<p>KNOWLEDGE</p>
	<p>Frothy bubbles from a chest wound</p> <p>Collapse of the chest on breathing in</p> <p>Expansion of the chest on breathing out</p> <p>Rebound tenderness</p> <p>Muscle guarding</p> <p>Absence of bowel sounds</p> <p>2.2 Perform a physical examination for patients in trauma or emergencies and record findings</p> <p>3.1 Use the Student Text and Diagnostic Guides to identify trauma and emergencies</p>	<p>2.2.1 How to record the physical findings</p> <p>3.1.1 The clinical picture of common traumas and emergencies</p>
<p>3. Diagnose these traumas and emergencies:</p> <p>Shock</p> <p>Unconsciousness</p> <p>Blocked airway</p> <p>Acute respiratory failure</p> <p>Snake bite</p> <p>Poisoning</p> <p>Bleeding</p> <p>Lacerations</p> <p>Fractures</p>		



Work Requirements DUTIES	Training Requirements SKILLS		KNOWLEDGE
Sprains Dislocations Burns Trauma to the eye Trauma to the head Trauma to the spinal column Trauma to the chest Trauma to the abdomen  4. Treat and care for patients in trauma or an emergency	4.1 Use Student Text, the Formulary, the Patient Care Guides, and Patient Care Procedures to treat patients in trauma and emergencies  4.2 Decide how to treat a patient in trauma or an emergency    4.3 Start an intravenous infusion in a peripheral vein	4.1.1 Where to find reference manuals and how to use them          4.2.2 Systematic steps in the assessment of an emergency or trauma patient  4.2.3 Type of immediate care required at the site of an accident or sudden illness  4.2.4 Properties of drugs and medicines used  4.3.1 How to start an IV infusion in a peripheral vein	



Work Requirements DUTIES	Training Requirements	
	SKILLS	KNOWLEDGE
	4.4 Place an unconscious patient in recovery position	4.4.1 How to place an unconscious patient in the recovery position and what precautions should be taken
	4.5 Relieve a blocked airway using: Backblows Manual thrusts Your fingers	4.5.1 How to use back blows, manual thrusts, and your fingers to remove a foreign body from a person's mouth and throat as rapidly as possible
	4.6 Perform mouth-to-mouth respiration	4.6.1 How and when to give mouth-to-mouth respiration
	4.7 Apply a direct pressure dressing	4.7.1 How to apply direct pressure to a wound
	4.8 Use a tourniquet to control bleeding	4.7.2 How to manage bleeding by raising the injured limb and applying dressings
		4.8.1 When to apply a tourniquet; the danger to limb and the patient's life that using a tourniquet poses; the technique of applying a tourniquet



Work Requirements DUTIES	Training Requirements	
	SKILLS	KNOWLEDGE
	4.9 Clean lacerations; give a local anesthetic; remove dead tissue from a wound; and suture superficial lacerations using a simple, interrupted stitch	4.9.1 When to suture a wound; how to suture a wound; how to clean a wound; how to give a local anesthetic; and the dangers of suturing and dressing unclean, wounds and bites
	4.10 Apply a triangular bandage to hold dressings to a shoulder, hip, groin, elbow, knee, hand, foot, or stump	4.9.2 How and when to use dressings
	4.11 Splint a fractured upper arm, forearm, wrist, shoulder blade, collar bone, upper leg, lower leg, kneecap, ankle, or foot	4.10.1 How to apply triangular bandages in fractures of limbs
	4.12 Use a triangular bandage to make an arm sling	4.11.1 How to use splints
	4.13 Restore a dislocated shoulder	4.12.1 How to use a triangular bandage to make an arm sling
	4.14 Bandage a sprained joint	4.13.1 How to restore a dislocated shoulder
		4.14.1 How to apply a bandage to a sprained joint



<div>Work Requirements</div> <div>DUTIES</div>	<div>Training Requirements</div> <div>SKILLS</div> <div>KNOWLEDGE</div>	
<div>5. Share with patients, relatives, and parents ways to prevent trauma and emergencies</div> <div>6. Give health workers, patients, and families advice on how to care for and prevent trauma and emergencies</div>	<div>4.15 Apply a triangular bandage to the scalp, head, chest, or back</div> <div>4.16 Move an injured patient by: Placing the patient with a possible fracture of his spinal column on a blanket Placing the patient on a stretcher using a blanket and the help of six people Placing the patient on a stretcher with the help of four people but without using a blanket</div> <div>5.1 Counsel patients and their relatives about preventing trauma and emergencies</div> <div>6.1 Tell a patient's family and community groups about trauma and emergencies and how to prevent them</div>	<div>4.15.1 How to apply a triangular bandage to an injured part of the body</div> <div>4.16.1 How to place a patient on a blanket or stretcher</div> <div>4.16.2 Care and precautions needed when moving a patient with an injured spinal column</div> <div>5.1.1 Recommended procedures for storing medicines and poisons</div> <div>6.1.1 How to tell groups of people about emergencies and trauma using aids to make messages clear</div>



Work Requirements DUTIES	Training Requirements	
	<p data-bbox="175 1366 211 1506">SKILLS</p> <p data-bbox="274 1177 431 1845">6.2 Teach community health workers about trauma and emergencies</p> <p data-bbox="467 1177 566 1845">6.3 Contact a health office for assistance</p>	<p data-bbox="184 458 220 746">KNOWLEDGE</p> <p data-bbox="283 158 381 982">6.2.1 The content of the community health worker modules</p> <p data-bbox="471 143 637 982">6.3.1 When and how to ask other members of the health team for help</p>



# SCHEDULE

## TRAUMA AND EMERGENCY

DAY 1	DAY 2	DAY 3	DAY 4
Introduction to Trauma and Emergency Pretest Assessing a patient in a life-threatening medical emergency	Diagnosing shock and unconsciousness  Treating and caring for patients suffering shock or unconsciousness	Diagnosing a blocked airway, acute respiratory failure, snake bite, and poisoning  Treating and caring for patients with a blocked airway, acute respiratory failure, snake bite, or poisoning	Recognizing the signs of trauma  Taking the medical history and performing a physical examination of a patient who has suffered trauma to the body
Taking the medical history and performing a physical examination of a patient in a life-threatening medical emergency			



DAY 5	DAY 6	DAY 7	DAY 8
Diagnosing severe bleeding and lacerations	Diagnosing fractures, sprains, dislocations, and burns	Treating and caring for patients with fractures, sprains, dislocations, or burns	Treating and caring for patients with trauma to the eye, head, spinal column, chest, or abdomen
Treating and caring for patients with bleeding and lacerations	Treating and caring for patients with fractures, sprains, dislocations, or burns	Diagnosing trauma to the eye, head, spinal column, chest, and abdomen	Sharing ideas with patients and a community on the Prevention of Accidents



DAY 9	DAY 10	DAY 11	DAY 12
<p>Assessing and caring for patients in trauma and emergencies; Clinical practice</p> <p>Group A - Interviewing and examining patients</p> <p>Group B - Providing patient care</p> <p>Group C - Sharing health messages</p>	<p>Assessing and caring for patients in trauma and emergencies; Clinical practice</p> <p>Group A - Providing patient care</p> <p>Group B - Sharing health messages</p> <p>Group C - Interviewing and examining patients</p>	<p>Assessing and caring for patients in trauma and emergencies; Clinical practice</p> <p>Group A - Sharing health messages</p> <p>Group B - Interviewing and examining patients</p> <p>Group C - Providing patient care</p>	<p>Assessing and caring for patients in trauma and emergencies; Clinical practice</p> <p>Group A - Interviewing and examining patients</p> <p>Group B - Providing patient care</p> <p>Group C - Sharing health messages</p>
<p>Assessing and caring for patients in trauma and emergencies; Clinical practice</p> <p>Group A - Interviewing and examining patients</p> <p>Group B - Providing patient care</p> <p>Group C - Sharing health messages</p>	<p>Assessing and caring for patients in trauma and emergencies; Clinical practice</p> <p>Group A - Providing patient care</p> <p>Group B - Sharing health messages</p> <p>Group C - Interviewing and examining patients</p>	<p>Assessing and caring for patients in trauma and emergencies; Clinical practice</p> <p>Group A - Sharing health messages</p> <p>Group B - Interviewing and examining patients</p> <p>Group C - Providing patient care</p>	<p>Posttest</p>

Clinical rotation: one week  
Community phase: three months







## Introduction

You have already studied the Anatomy and Physiology, Medical History and Physical Examination modules. What you have learned in these clinical knowledge and skills modules has prepared you for the study of trauma and emergency situations. Before you start this module, be sure you know:

- The normal anatomy and physiology of the human body
- How to take a medical history from either the patient or his relative
- How to give a physical examination
- How to give intramuscular and intravenous injections
- How to present health messages

If you are not sure how well you know this information or can do these procedures, review the clinical knowledge and skills modules before you go on.

Activities in this module will help you learn how to properly diagnose and care for trauma and emergency cases. These activities will take place in the classroom, hospital clinic, health center, and occasionally at the site of the incident. Student guides in front of each unit will tell you more about what you will be expected to do. The units will be taught in order, from Unit 1 to Unit 10. Your teacher will make special arrangements for Unit 11 which will take place in a clinic and a community.

This training program can succeed only if you take an active part. Prepare for each session. Before each session:

- Read the Student Text and answer the review questions that go with it
- Read the Patient Care Guides and learn about the drugs you will be using
- Write down the questions to ask your teacher about any part of the lesson you do not understand

In class, the teacher will discuss the review questions and answer any other questions you have.

This training program will help you build your knowledge and skills. Regular evaluations will allow your teacher to watch your progress. If your progress does not meet the standard, you will be given more time to learn your subject. Your instructor will use the Clinical Performance Records for Evaluation Levels I, II, and III to measure your progress. Look at these performance records to prepare for your evaluations.

### EVALUATION Level I

After twelve days of classroom and clinical experience related to trauma and emergency, you must be able to pass a written test of knowledge about trauma and emergency problems with a score of 80% or higher. You must receive two Satisfactory ratings on your ability to:

- Recognize the abnormal signs of trauma and emergency problems

- Interview patients or their relatives about a trauma or emergency problem

- Examine people with trauma and emergency problems

- Provide information to patients and their relatives about the prevention of trauma and emergency problems

- Present health messages about preventing trauma and emergencies

### EVALUATION Level II

You will have one week of clinical practice. To satisfy the requirements of this clinical evaluation, you must diagnose, treat, and advise patients for each of these problems: shock, unconsciousness, blocked airway, acute respiratory failure, snake bite, poisoning, bleeding, lacerations, fractures, sprains, dislocations, burns, trauma to the eye, trauma to the head, trauma to the spinal column, trauma to the chest, and trauma to the abdomen.

During your clinical experience, you will be expected to get a Satisfactory rating on your skill in doing as many of these patient care procedures as possible:

- Starting an intravenous infusion in a peripheral vein

- Removing a foreign body from a person's throat with your fingers



Using back blows to clear a child's blocked airway  
Using manual thrusts to clear an adult's blocked airway  
Performing mouth-to-mouth respiration  
Applying a pressure dressing  
Using a tourniquet to control bleeding  
Cleaning lacerations  
Giving a local anesthetic  
Removing dead tissue from a wound  
Suturing superficial lacerations using a simple, interrupted stitch  
Applying a triangular bandage to hold dressings to a shoulder, hip, or groin  
Applying a triangular bandage to hold dressings to an elbow or knee  
Applying a triangular bandage to hold dressings to a hand, foot or stump  
Splinting a fractured upper arm  
Splinting a fractured forearm or wrist  
Splinting a fractured shoulder blade  
Splinting a fractured collar bone  
Splinting a fractured upper leg  
Splinting a fractured lower leg  
Splinting a fractured kneecap  
Splinting a fractured ankle or foot  
Using a triangular bandage to make an arm sling  
Restoring a dislocated shoulder  
Bandaging a sprained joint  
Applying a triangular bandage to the scalp and head  
Applying a triangular bandage to the chest or back  
Placing a patient with a possible fracture of the spinal column on a blanket  
Placing a patient on a stretcher using a blanket and the help of six people

Placing a patient on a stretcher with the help of four people but without using a blanket

### EVALUATION Level III

After three months of community practice you must have the required number of satisfactory ratings on your ability to:

- Diagnose and treat trauma and emergency problems

- Provide patient and relatives with advice and ways to prevent future trauma and emergency problems

- Conduct community meetings to discuss the prevention and care of trauma and emergency

- Train community health workers to assist with the community problems of trauma and emergency



## *Unit 1*

# **Assessing a Patient in a Life-Threatening Medical Emergency**

### STUDENT GUIDE

#### OBJECTIVES

1. Describe these signs of a life-threatening medical emergency:

Gagging

Absence of respiratory effort

Cyanosis

Anxiety and restlessness

Cold and clammy skin

Pallor

Rapid and weak pulse

Low blood pressure

Rapid and shallow breathing

Decrease in urine output

Large, red welts on the skin

Wheezing

Decreased consciousness

Dilated, pinpoint, or unequally sized pupils and the abnormal reaction of pupils to light

Neck stiffness in an unconscious patient

Tenting of the skin in an unconscious patient

Bulging fontanelle in an unconscious patient

Convulsions in an unconscious patient

Black-and-blue skin around a bite

Drooping eyelids and slurred speech

Bleeding from the gums and mouth

Burns around the mouth

Sweating and drooling

Slow and shallow breathing

Unusual odor on a patient's breath

2. Recognize the signs of a life-threatening medical emergency.
3. Interview a patient or his relative about a life-threatening medical emergency.
4. Examine a patient in a life-threatening medical emergency.
5. Record your findings in the recommended way.

### LEARNING ACTIVITIES

1. Discuss the meaning of a life-threatening medical emergency and the physical signs associated with such an emergency.
2. In your working group, write ten questions about the signs of a life-threatening medical emergency.
3. Ask another working group your ten questions.
4. Discuss the importance of history taking in a life-threatening medical emergency.
5. Observe and discuss an instructor's demonstration of how to take a medical history and perform a physical examination of a patient in a life-threatening medical emergency.
6. Practice taking medical histories and performing physical examination procedures with another student, using case studies for patient information.
7. With a small group of fellow students, be on call at a hospital emergency room or health center during the evening to observe how emergency problems are handled.



## 1.1 SIGNS OF LIFE-THREATENING MEDICAL EMERGENCIES

Life-threatening emergencies fall into three categories: problems of breathing and bleeding; problems of shock and unconsciousness; and problems of poisoning and snake bite.

Breathing problems are always life-threatening emergencies. Treatment or medical care must begin within five minutes. Bleeding may be a life-threatening emergency. Severe bleeding from lacerations involving an artery or a large vein can cause death within five minutes. Most lacerations, however, will not lead to death in a short time. The signs of severe bleeding will be discussed in Unit 4.

Shock and unconsciousness can be life-threatening emergencies. You must provide medical care to a patient who is in shock or unconscious before you transfer him to a hospital.

Poisoning and snake bites threaten life, but not immediately. A person who is poisoned or bitten by a snake usually has time to seek medical care.

Breathing, or respiratory, problems are always life-threatening emergencies. The major signs of breathing problems are gagging, absence of respiratory effort, and cyanosis.

### *Gagging*

Gagging occurs when a person chokes on food or any other foreign body which catches in the pharynx or trachea. Gagging is a sign of a blocked upper airway.

### *Absence of Respiratory Effort*

An absence of respiratory effort means a person is making no attempt to breathe. No oxygen reaches the person's brain, and he loses consciousness.

### *Cyanosis*

Cyanosis, the blue coloration of a person's skin, is a sign that the person's blood has a low oxygen content. The lack of oxygen causes the blood to turn dark red. The dark red blood looks blue

when you see it through the person's skin. The lips and nail beds are the first parts of a person's body to turn blue.

Trauma and emergency of any kind can lead to shock or unconsciousness. Shock and unconsciousness can be life-threatening emergencies. Following are the major signs of shock and unconsciousness.

#### *Anxiety and Restlessness*

Anxiety and restlessness are the first signs of shock. A reduced supply of blood to the brain causes these feelings.

#### *Cold and Clammy Skin*

The body protects its vital organs during an emergency by reducing the supply of blood to the skin. Blood vessels in the skin constrict. The skin becomes cold. The person sweats. This sweating makes the skin feel clammy.

#### *Pallor*

Reduced blood supply to the skin changes the skin to a pale color. This paleness is pallor, a sign of shock.

#### *Rapid and Weak Pulse*

Shock increases the pulse rate. A pulse rate of more than ninety beats per minute in an adult or more than one hundred beats per minute in a child is a sign of shock. The heart beats faster to keep up the supply of blood to the body when blood pressure falls or blood volume decreases. A rapid and weak pulse is a clear sign of shock.

#### *Low Blood Pressure*

Loss of blood or other body fluids decreases blood pressure. A blood pressure of less than 100/60 in an adult is a sign of shock. The blood pressure may not fall in the early stages of shock.

#### *Rapid and Shallow Breathing*

A person in shock takes rapid and shallow breaths. This rapid and shallow breathing occurs because the person does not have enough blood to easily supply all the parts of his body with oxygen.



*Decrease in Urine Output*

Shock reduces the blood supply to the kidneys. As a result, the output of urine from a person in shock is greatly reduced. The output of urine may stop altogether in severe cases of shock.

*Large, Red Welts on the Skin*

Large, red welts may occur on the skin in some cases of shock. This is a sign of an allergic reaction. The allergic reaction dilates blood vessels in the skin as well as other parts of the body. The dilated blood vessels decrease the blood pressure, causing shock.

*Wheezing*

Wheezing may be associated with shock that is caused by an allergic reaction. The allergic reaction constricts the bronchioles, making breathing difficult. Wheezing occurs when air moves through the constricted bronchioles.

A reduced supply of blood to the brain can lead to unconsciousness and coma. Shock reduces the supply of blood to the brain and often causes unconsciousness. Trauma to the brain, toxins produced by bacteria, and a sudden loss of blood pressure can also lead to unconsciousness. Look for the following signs in an unconscious patient.

*Decreased Consciousness*

The victim of an accident or injury may have a level of consciousness, or awareness, that is below normal. He may respond only on hearing his name. He may respond only when he is shaken. Sometimes light pain or strong pain is needed to produce a response. No response to anything you do is a sign of a coma, the deepest level of unconsciousness.

*Dilated, Pinpoint, or Unequally Sized Pupils and the Abnormal Reaction of Pupils to Light*

The reaction of a patient's pupils to light will give you an idea of the state of his nervous system. For example, unequally sized

pupils indicate that one side of the person's brain has been damaged. Pupils that do not respond to light usually are dilated and fixed, a sign of severe damage to the brain. Pinpoint, or constricted, pupils occur in cases of poisoning by insecticides, the powders or sprays used to kill insects. The pupils react to the poison by contracting. The pinpoint sized pupils may not react to light in cases of severe poisoning.

#### *Neck Stiffness in an Unconscious Patient*

Stiffness of the neck in an unconscious patient occurs when the person's meninges are irritated or inflamed. Bending the neck so the chin touches the chest causes pain. The patient stiffens his neck. This sign is difficult to detect in an unconscious patient.

#### *Tenting of the Skin in an Unconscious Patient*

Tenting of the skin is a sign of severe dehydration. When you note the tenting of skin in an unconscious patient, suspect dehydration as the cause of the unconsciousness.

#### *Bulging Fontanelles in an Unconscious Patient*

A bulging fontanelle in an unconscious child is a significant sign of meningitis. The increase of fluid between the meninges and brain makes the fontanelle bulge.

#### *Convulsions in an Unconscious Patient*

Increased pressure on the brain, some poisons, and a severe lack of oxygen supply to the brain can cause convulsions in an unconscious patient. Epilepsy will cause convulsions before the person becomes unconscious.

Snake venom and man-made poisons can cause life-threatening emergencies. Some poisons can cause death in an hour. Some poisons cause death in a few days. Look for the following signs of snake bite and poisoning.

#### *Black-and-Blue Skin around a Bite*

Black-and-blue skin occurs around a snake bite because snake venom causes bleeding into the skin. This bleeding discolors the skin and causes severe pain.



*Drooping Eyelids and Slurred Speech*

Some kinds of snake venom affect the brain. Venoms that affect the brain will cause drooping eyelids and slurred speech. The person may also have trouble swallowing.

*Bleeding from the Gums and Mouth*

Some kinds of snake venom prevent the blood from clotting. The gums and mouth will bleed. You may also note signs of bleeding into the skin, bleeding into the urine, and bleeding into the stomach. Severe internal bleeding may lead to shock.

*Burns around the Mouth*

Burns around the mouth are signs that a person has swallowed acid or caustic poisons. Caustic poisons cause raw, red patches on the skin. The patches are surrounded by dead, gray tissue. Burns around the mouth are a sign of possible damage to the esophagus and stomach.

*Sweating and Drooling*

Increased sweating and drooling are signs of swallowing or contact with insecticides, the poisons used to kill insects. These poisons affect the nerves to the sweat glands and the salivary glands.

*Slow and Shallow Breathing*

Slow and shallow respirations are signs that the center of the brain that controls breathing has been damaged. Slow respirations can lead to respiratory failure and death.

*Unusual Odor on a Patient's Breath*

Some poisons have a strong smell. Petroleum products and insecticides, the poisons used to kill insects, have a smell that will linger on a person's breath. Smelling petroleum or insecticide on an unconscious person's breath will help you diagnose these kinds of poisoning.

## 1.2 TAKING THE MEDICAL HISTORY OF A PATIENT IN A LIFE-THREATENING MEDICAL EMERGENCY

You may not have time to ask about what happened to a person in a life-threatening emergency. Your patient may often be unconscious or in shock. You will have to start treatment first, then ask the patient, his relative, or a witness the following questions.

*“Did the Patient Start Choking While He Was Eating?”*

Food and fish bones can block an upper airway. Peanuts, raisins, and small objects such as marbles or coins can stick in a child's throat.

*“Did the Patient Suddenly Collapse?”*

A person may suddenly collapse without gagging. A blocked upper airway can rapidly reduce oxygen in the blood and slow the working of the brain, causing sudden unconsciousness.

*“Did the Child Have Any Throat Infection?”*

Throat infections such as diphtheria and croup can block a person's airway. The tissue around the epiglottis and larynx swells and blocks the opening to the larynx. The person will usually have some history of breathing trouble but the block often is sudden.

*“Was the Patient Exposed to Hot Gas or Hot Smoke?”*

Hot gas or hot smoke from a fire can cause an acute airway block. Tissues in the throat and larynx swell when they are burned.

*“Was the Patient Taking Any Drugs?”*

Some drugs affect the brain. The brain controls the respiratory system. A drug that affects the brain can cause a patient to stop breathing.



An allergic reaction to some drugs can make the epiglottis and the larynx tissue swell. The swelling can block the person's airway. This reaction may occur very rapidly.

*“Did the Patient Suffer Any Injury to His Neck or Face?”*

A face or neck injury can block a person's airway with blood or swollen tissues. Strangulation causes swelling and damage to throat tissues. The resulting obstruction may also cause respiratory failure.

*“Was the Patient Found in a Closed Room with a Fire?”*

A poorly burning fire produces a gas called carbon monoxide. Carbon monoxide prevents oxygen from combining with the blood. Lack of oxygen in the blood affects the brain and produces acute respiratory failure.

*“Was the Patient Found Near or in Contact with an Electric Wire?”*

Strong electric shock affects the nervous system. The person's breathing and heartbeat will stop.

*“Was the Patient Found in Water?”*

Drowning can block a person's airway or cause respiratory failure. A person whose lungs are filled with water will not be able to breathe even if he is brought to dry land. Sometimes a drowned person may have no water in his lungs. The larynx can close and keep water from entering the lungs. Respiratory failure occurs because no oxygen reaches the brain.

Some life-threatening emergencies such as shock require urgent attention, but you will still have time to ask questions. You may have to question the patient's relative or a witness to an accident. Ask the following questions.

*“How Long Has the Patient Been in Shock?”*

Knowing how long a patient has been in shock will give you an idea of how serious the shock is. When a lot of time has passed, treatment must be fast to save the patient's life. You may not have time to find out the cause of the shock until the patient's condition is stable.

*“When and How Did the Patient Have an Accident?”*

Knowledge of when and how an accident occurred will help you decide how to treat for shock. Knowing the cause of the shock will also help you decide what treatment to start immediately.

*“Has the Patient Been Vomiting?”*

The loss of fluids by vomiting can very rapidly cause severe dehydration which results in shock.

*“Is the Patient Having Any Diarrhea?”*

Severe diarrhea commonly leads to shock. A large amount of fluid is lost from the body with diarrhea.

*“How Was the Patient Burned?”*

Burns can cause shock in two ways. First, body fluid is lost through the burn area. Loss of body fluid can rapidly lead to shock. Second, infection of a burn can cause septic shock.

*“Did the Patient Recently Receive an Injection?”*

Drugs such as penicillin can cause a severe allergic reaction and lead to a rapid drop in blood pressure and shock. This type of shock requires urgent treatment.

*“Has the Patient Been Sick During the Past Week?”*

The patient may have had an infection during the past week. Some bacterial infections produce toxins which cause septic shock. Septic shock can occur with septic abortion, severe urinary tract infection, and infection following childbirth.

*“Does the Patient Have Any Chronic Disease?”*

Hypoglycemia and ketoacidosis can cause shock. Ask whether the patient takes insulin for diabetes.

Because you cannot question an unconscious patient, you will have to question his relatives or the people who bring him to you. Ask them the same questions you would ask about a patient in shock, because shock often leads to unconsciousness. Also ask the following questions.



*“Did the Patient Suffer Any Head Injury?”*

A head injury is one of the most common causes of unconsciousness. Find out whether the patient was unconscious for a short time before he regained consciousness. You must watch this patient for forty-eight hours. Also find out whether the patient with a head injury has a headache that is growing worse. A worsening headache is a sign of bleeding in the brain.

*“Has the Patient Been Drinking Alcohol?”*

Alcohol intoxication often presents as unconsciousness. Check for the smell of alcohol. Find out whether the patient has been drinking for a long time. If he has, suspect liver failure. The patient's unconsciousness may also follow an injury to the head from falling.

*“Has the Patient Been Taking Drugs?”*

Many drugs and poisons cause unconsciousness. Find out exactly what drugs the patient has been taking. Find out whether he is being treated for any disease. Check the patient's record and see what drugs he has been given. Ask relatives to bring in any drugs they have in the house.

*“How Did the Unconsciousness Develop?”*

Find out whether the unconsciousness was sudden or gradual. Strokes and a ruptured blood vessel gradually lead to unconsciousness. Sudden unconsciousness may occur with a convulsion. A head injury usually causes sudden unconsciousness.

Snake bite can be a life-threatening emergency. You may have to treat the patient for shock before you ask these questions.

*“When Did the Snake Bite You?”*

A delay in treating a snake bite increases the risk of severe poisoning. The treatment you give for a snake bite depends on how much time has passed before you give aid.

*“What Kind of Snake Bit You?”*

Different snake venoms have different effects. Some venoms

destroy the tissue at the site of the bite. Some venoms spread into the blood and affect the nerves. Some venoms destroy the blood cells. The kind of snake will give you or a doctor an idea of how much poison has been injected. Some snakes bite deeply and inject a large amount of venom. Others do not bite deeply and inject only a small amount of venom. Some snakes inject a small amount of very poisonous venom.

*“Do You Feel Weak? Do You Have Trouble Speaking?”*

Some snake venoms affect the nervous system. The patient feels weak. His speech is slow and slurred. The venom can cause weakness of the chest muscles and interfere with breathing.

*“Have You Noticed Any Change in the Color of Your Urine?”*

Patients with snake bite may have blood in their urine. Some snake venoms destroy red blood cells which pass out of the body in urine.

*“Have You Bled from Your Gums or Mouth?”*

Some snake venoms prevent the blood from clotting and cause bleeding from the gums.

Poisoning can be a life-threatening emergency. The patient may be conscious and slightly confused. He may be drowsy. You can question the patient, but you may not receive intelligent answers. You may have to question relatives and rely on your physical examination.

*“When Did the Patient Swallow the Poison?”*

Recent swallowing of a poison will indicate that the poison is in the stomach and can be washed out. If the poison was swallowed hours before, a large amount of the poison probably has been absorbed. Urgent treatment will be necessary. The risk of peritonitis also increases in time with some poisons.

*“What Poison Was Swallowed?”*

You must identify the poison if possible. Poisons act in many ways. Some insecticides affect the nerve endings. Petroleum products affect the brain. Cleaning agents burn tissue.



*“How Much Poison Did the Patient Swallow?”*

The effect of a poison depends on the type of poison and amount of poison swallowed. Many poisons cause shock. Small amounts of poison are not often fatal. Large amounts of poison are often fatal. Death may occur even with treatment.

*“Did the Patient Vomit?”*

Poisons irritate the stomach and cause vomiting. The vomit may enter the lungs of an unconscious patient. Poison in a person's lungs can cause severe pneumonia.

*“Do You Have Blurred Vision?”*

Insect poisons affect the nerves and the small muscle of the pupil. The pupils constrict, blurring vision.

*“Do You Have Any Pain in Your Mouth, Throat, Chest, or Abdomen?”*

A person who swallows acids or cleaning agents may burn his mouth, throat, esophagus, and stomach. These burns are very painful. Petroleum products also cause pain in the abdomen.

*“Did the Patient Have Convulsions?”*

Some poisons such as insecticides and petroleum products cause convulsions. These poisons excite the brain cells.

*“Do You Feel Dizzy?”*

Petroleum poisons will make a person feel dizzy.

### 1.3 EXAMINING A PATIENT IN A LIFE-THREATENING MEDICAL EMERGENCY

Examining a patient in a life-threatening emergency requires speed and accuracy. You will have to decide as quickly as possible what emergency care must be given. For this reason, the examination of the patient depends first on the observation of his vital signs. The basic vital signs, together with the patient's injuries and condition, will form the basis of the diagnosis.

You may often have to start emergency care before you can complete the examination in a life-threatening emergency. Follow these steps in examining a patient in an emergency.

#### *Note the Patient's Respirations*

The normal breathing rate in an adult is twelve to fifteen breaths per minute and about twenty per minute in a child. Observe how deeply he breathes. Look for movement of his chest. Feel and listen for air movement at his mouth and nose. Finding no respirations indicates respiratory arrest. Deep, gasping breaths or other signs of trouble getting air into the lungs indicate an airway block.

#### *Note the Pulse Rate*

Note the pulse rate by placing your finger on the carotid artery in the neck or femoral artery in the groin. Listen for a heart beat if you do not feel a pulse. The normal pulse rate for an adult is sixty to eighty beats per minute. A child's normal pulse rate is eighty to one-hundred beats per minute. A rapid and weak pulse is a sign of shock.

#### *Note the Blood Pressure*

Measure the patient's blood pressure. Take the blood pressure reading as soon as possible after giving emergency care. Low blood pressure may be a sign of shock.



*Note the Temperature of the Skin*

Note the patient's skin temperature by feeling the skin surface at different places. Use the back of your hand. It is more sensitive. Any change in the temperature of the skin indicates changes occurring in the body. Hot and dry skin is a sign of fever. Cold and clammy skin is a sign of shock. Cool, dry skin suggests that the patient has been exposed to cold.

*Note the Color of the Skin*

Carefully examine the patient's face and hands. Observe whether the color is red, pale white, or blue. Blood circulating through the skin affects the skin's color. A change in skin color indicates a change in the amount of blood flow, or a change in the amount of oxygen in the blood.

Blue skin indicates a lack of oxygen in the blood. White or pale skin indicates shock or loss of blood. Reddened skin is caused by an increased flow of blood through the skin, as in carbon monoxide poisoning.

*Note the Pupils of the Eyes*

Examine the patient's pupils by gently sliding back his upper eyelids. Note whether the pupils are wide, or dilated, or whether they are narrow, or constricted. Note whether the pupils are equal or unequal in size. Flash light into the eyes and check for response of the pupils. The pupils are good signs of the state of the central nervous system. Dilated pupils indicate unconsciousness. The pupils may not react to light. Dilated pupils that do not react are a sign of brain damage. Constricted pupils are a sign of poisoning or central nervous system damage. Pupils of unequal size indicate a stroke or other injury to the brain.

*Note the State of Consciousness*

Note the patient's state of consciousness and record any changes. A healthy person is alert and aware of time. He responds to questions. When an alert person becomes unconscious, suspect damage to the brain.

A confused patient usually has suffered a slight blow to the head. Alcohol and some types of mental disease may also cause confusion. The patient may respond to hearing his name called. A

patient who needs to be shaken has a low level of consciousness. A patient who responds only to light pain or strong pain has a very low level of consciousness. A severe blow to the head will cause a very low level of consciousness. A patient who cannot be roused by any means is in a deep coma. Coma is a sign of severe brain damage or poisoning.



## REVIEW QUESTIONS

### **Assessing a Patient in a Life-Threatening Medical Emergency**

1. TRUE (T) or FALSE (F)
  - \_\_\_\_\_ Shock cannot develop without loss of fluid from the body.
  - \_\_\_\_\_ The narrowing of blood vessels in shock makes skin cold and clammy.
  - \_\_\_\_\_ Shock does not reduce a person's output of urine.
  - \_\_\_\_\_ Anxiety and restlessness are early signs of shock.
2. What can the size of an unconscious patient's pupils tell you about the patient's condition?
3. List four signs of shock.
4. List three signs that indicate a person is having trouble breathing.
5. Explain how a blocked airway or respiratory failure causes cyanosis.
6. List three signs of snake bite.

7. Match the diagnostic signs in the first column with the problems listed in the second column.

- \_\_\_\_\_ Convulsions
- \_\_\_\_\_ Drooling and sweating
- \_\_\_\_\_ Slow and shallow breathing
- \_\_\_\_\_ Gagging
- \_\_\_\_\_ Drooping eyelids
- \_\_\_\_\_ Cyanosis
- \_\_\_\_\_ Absence of respiratory effort
- \_\_\_\_\_ Black-and-blue skin around a bite
- \_\_\_\_\_ Pinpoint pupils
- \_\_\_\_\_ Bleeding from gums and mouth
- \_\_\_\_\_ Unusual odor on a patient's breath
- \_\_\_\_\_ Burns around the mouth

- A. Blocked airway
- B. Acute respiratory failure
- C. Snake bite
- D. Poisoning



## *Unit 2*

# **Shock and Unconsciousness**

### **STUDENT GUIDE**

#### **OBJECTIVES**

1. Describe the signs of shock and unconsciousness.
2. Interview a patient or his relative to diagnose shock and unconsciousness.
3. Provide care for patients suffering from shock or unconsciousness by starting an intravenous infusion in a peripheral vein, and placing a patient in the recovery position.

#### **LEARNING ACTIVITIES**

1. Discuss the signs of shock and unconsciousness.
2. Practice taking a medical history and diagnosing shock or unconsciousness, using patient information created by you and your fellow students as the basis for role-play.
3. Practice identifying the causes of shock and unconsciousness found in case studies, and outline the treatment and care procedures for these causes.
4. Observe, discuss, and practice the procedure for intravenous infusion in a peripheral vein.
5. Observe, discuss, and practice the procedure for placing an unconscious patient in the recovery position.
6. With a small group of fellow students, be on call at a hospital emergency room or health center during the evening to observe how emergency problems are handled.

## 2.1 SHOCK

Almost all traumas and emergencies can lead to shock. The most important causes of shock are bleeding, low blood pressure, burns, loss of body fluids, infections, heart attacks, and allergic reactions to chemicals or stings.

Severe bleeding is the most common cause of shock. Bleeding reduces the total volume of the circulatory system. Blood vessels in the skin, muscles, and intestines contract to protect the vital organs.

Low blood pressure reduces the amount of blood which flows to the brain, heart, and kidneys. When these vital organs do not receive enough oxygen to carry on their normal activities, a person goes into shock.

Burns allow body fluids to escape from damaged tissue. A person who has suffered severe burns will go into shock if he is not given an amount of fluid equal to the amount of body fluids he has lost. Diarrhea also causes the body to lose fluids. A person with severe diarrhea will go into shock if those body fluids are not replaced.

Certain infections can cause shock. The infections can occur from complications of an attempted abortion, infection following childbirth, or severe urinary tract infections. Bacteria from these infections cause blood vessels throughout the body to dilate. This shock, produced by toxins from bacteria, is called septic shock.

A severe heart attack can lead to shock because the heart fails to pump a normal amount of blood through the circulatory system. Drugs and insect stings, such as bee stings, which are harmless to many people can cause an allergic reaction and shock in others. This type of allergic shock, caused by a reaction to drugs, chemicals, or insect stings, is called anaphylactic shock. Anaphylactic shock dilates the blood vessels. The person's blood pressure falls, and shock occurs.

### CLINICAL PICTURE

#### a. Presenting complaint

A person in shock usually has some injury. He may be bleeding. He may have diarrhea. He may be vomiting. Usually he is *very weak*. He cannot stand. He feels dizzy. He is *anxious* and he fears



he will die. He feels very *thirsty*. Often he says he has blurred vision. He may be *nauseous* and he may *vomit*. He may complain he *cannot breathe enough air*. He may complain of severe itching or flushing of his skin. The patient often is brought in unconscious.

#### b. Medical history

Always determine the cause of a patient's shock. Ask the patient, his relatives, or his companions about the cause if it is not apparent. Ask about infections that might have been caused by urinary tract infections or abortions. Ask about chest pains that might have been caused by heart attacks. Also ask whether the patient has had any drugs, chemicals, or stings.

#### c. Physical examination

The patient will look very *restless* and *anxious*. His *respirations will be shallow* and *rapid*. He may gasp for air and have trouble breathing. His *pulse* may be *weak* and rapid. An adult's pulse will be faster than ninety beats per minute. A child's pulse will be faster than one hundred beats per minute. An adult's *blood pressure gradually falls below 90/60*.

The patient's *skin* will be *cold* and *clammy*. He will be sweating. His *skin* will be *pale* and his *lips* and *nail beds* will be *blue* if he has lost much blood. His pupils may be dilated. They may react slowly to light. The patient may be *unconscious*. He may not respond to hearing his name, to being shaken, or to pain. He may be in a coma and not respond at all. A person who has been in shock for more than three hours will have little or no urine flow.

In shock caused by reactions to drugs, chemicals, or stings, look for *large red welts* on the patient's skin. Also look for *swelling* of the *face* and *lips*. The patient may be *wheezing* and have *trouble breathing*. He may rapidly go into a coma.

Carefully examine the patient. Check for any internal injuries, hidden injuries, or infections.

### COURSE AND COMPLICATIONS

A person who suffers shock caused by an accident may lose consciousness and later go into a coma if he does not receive prompt care.

### PATIENT CARE

A person who has suffered bleeding, severe burns, or loss of body



fluids risks shock. Start treatment before the signs of shock occur. Treatment of shock is more difficult after it develops than before. Stabilize the patient's condition before beginning treatment for shock.

- a. Check the patient's airway to be sure that it is clear.
- b. Carry out mouth-to-mouth respiration if the patient is not breathing.
- c. Stop any severe bleeding.
- d. Prevent movement of fractured bones or a fractured spinal column. Moving fractured bones or a fractured spinal column can increase bleeding and worsen shock.
- e. Keep the patient warm. Put blankets over him and under him.
- f. Raise a prone patient's feet and legs about twelve inches above his head. Raising his legs helps to increase the amount of blood available to his vital organs.
- g. Do not give a patient in shock anything to eat or drink. A person in shock may be thirsty. However, he may later vomit and suck the vomit into his lungs.

Begin treatment for shock when you are sure that the patient's condition is stable.

- a. Start an intravenous infusion. Do not wait for severe shock to develop. Severe shock will collapse a patient's blood vessels. You will have a hard time starting an intravenous infusion when the patient has already developed severe shock. Start an IV as early as possible for this reason. See Patient Care Procedures.

Patients in shock because of bleeding need fluid to increase the volume of their blood. Use a normal saline solution of Ringer's Lactate. The patient will need whole blood as soon as possible. See Patient Care Guides.

- b. Take and record the patient's pulse and blood pressure at regular intervals. This information will help you follow the progress of shock or the patient's recovery from shock. Record these vital signs at least every fifteen minutes.
- c. Transport the patient to a hospital as quickly as possible. Keep him warm, but do not let him become so hot that he sweats. Keep his feet and legs slightly higher than his head. Continue the IV during transportation.



If the patient has lost a lot of blood, urge at least two of his relatives to go to the hospital with him to donate blood.

When you suspect that your patient suffers septic shock because of a severe infection, give him antibiotics. See Patient Care Guides.

If a patient goes into shock shortly after receiving an injection, a bee sting, or exposure to other drugs or chemicals, give him epinephrine. If the signs develop again or grow worse, repeat the injection every ten to twenty minutes. See Patient Care Guides.

### PREVENTION

Prepare people for emergencies by teaching them about first aid. First aid will help prevent shock or reduce its effects. Also urge people to prevent accidents by making their homes and work places safe. Store drugs, chemicals, and poisons in safe places.

## 2.2 UNCONSCIOUSNESS

Loss of consciousness or unconsciousness is a condition in which a person is unaware of events around him and cannot be awakened. He does not wake up when he is called by name, or when he is shaken, or when he feels light pain or strong pain.

Fainting is the most common cause of unconsciousness. A person faints when his blood pressure suddenly drops. His brain does not get the oxygen it needs to function properly. A person faints when he is frightened, when he feels severe pain, or when he suddenly stands after lying down. Fainting usually lasts only for a few minutes.

Other reasons a person will lose consciousness include shock, attacks of epilepsy, poisoning, meningitis, diabetes, severe trauma to the head, blood clots in blood vessels leading to the brain, alcohol taken in large amounts, cerebral malaria, and cirrhosis of the liver.

### CLINICAL PICTURE

#### a. Presenting complaint

The patient usually is brought to you unconscious. He will be limp. He will not move. He *will not respond* to any questions.

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b. Medical history

Find out how the patient lost consciousness. Did he lose consciousness suddenly or gradually? Did he lose consciousness for a short time, regain consciousness, then lose consciousness again? A person with head injuries may lose consciousness for a short time, regain consciousness, then complain of a headache, become confused, and lose consciousness again.

Find out whether the patient has taken any *drugs, alcohol, medicine, or other chemical*. Find out whether he has had any medical problem such as *diabetes* which might lead to unconsciousness.

c. Physical examination

First check the patient for any sign of *bleeding*. Look at the ground around him and at his clothing. Stop any bleeding that threatens the patient's life.

Examine the patient's airway and breathing. Put your ear next to his nose and mouth. Carefully observe his chest for movement.



A *diabetic* with ketoacidosis will have *deep and rapid respirations*. *Poisoning* or *drug overdose* will *decrease respirations*. Check the patient's pulse. Feel the carotid pulse in his neck and the pulse in the wrist or groin. Determine the rate and strength of his pulse. Look for signs of shock.



Once you have made sure that the patient's airway is clear, that he is breathing, that he is not bleeding, that his condition is stable, examine him to identify the cause of unconsciousness.

Examine the patient's *skin*. It may be *cold* and *clammy*. Look for *pallor* and *cyanosis*. Look for any *skin tenting*, a sign of dehydration.

Examine the patient's pupils. Are they round? Do they react to light? Are they of equal size? Are they a normal size? Suspect a stroke or head trauma when you see *unequally sized pupils*. Suspect poisoning or an overdose of drugs when you see a patient with *pinpoint pupils* or *widely dilated pupils*.

Determine the patient's *level of consciousness*. Find out whether he responds to his name. Does he wake up with shaking or with light pain or strong pain? This information will help you decide what treatment to give him.

Check for *paralysis* or *weakness*. Compare the two sides of the patient's body. A person who has suffered a stroke may be paralyzed only on one side. You might be able to detect a difference in muscle tone between the sides of the body. Check for major trauma to other parts of the body.

Examine the *neck* for *stiffness*. Look for a *bulging fontanelle* in a child.

Once you have completed the general examination, quickly feel all the parts of the body, beginning with the skull. Palpate carefully to check for any swelling, deformity, or unexpected reactions. Do not move the patient if you suspect a neck injury. Record your findings.

## COURSE AND COMPLICATIONS

Loss of consciousness can lead to death if the person is not treated. The lack of immediate support of breathing or control of shock will kill the patient. Unconsciousness occurs just before death in many diseases.

## PATIENT CARE

First treat the patient for any breathing, bleeding, or heart problems. Do not move the patient if he has any spinal column or neck injuries. When you are sure that the unconscious patient's condition is stable and that he does not have any spinal column or neck injuries, put him in a recovery position. Follow these steps to put a patient in recovery position.

- a. Kneel beside the patient.
- b. Place both his arms close to his body.
- c. Gently turn the patient on his side.
- d. Move the patient's upper arm at a right angle to his body. Bend it at the elbow.
- e. Move the patient's upper leg so the thigh is at a right angle to his body. Bend his knee.
- f. Move the patient's lower arm behind his back.
- g. Slightly bend the lower knee.

Transport an unconscious patient in this recovery position, if possible. This position will help ensure that the patient does not inhale his vomit and choke.

Begin treating the patient for any medical problem that might have caused him to lose consciousness. Continue your treatment while you transport him to a hospital. See Patient Care Guides.

#### PREVENTION

Early treatment for shock in emergencies will help prevent a patient from losing consciousness.



## REVIEW QUESTIONS

### Shock and Unconsciousness

1. Explain why severe bleeding causes shock.
2. What is the most common cause of shock?
3. Match the causes of shock with the explanations of why shock occurs.

_____ Bleeding	A. Loss of fluid from the body
_____ Diarrhea and vomiting	B. Sudden decrease in blood volume
_____ Burn	C. Blood vessels dilate
_____ Infection following childbirth	
_____ Reaction to drugs, chemicals, or insect stings	
4. Match the causes of shock with the type of shock that occurs.

_____ Drug reaction	A. Shock from decreased blood volume
_____ Septic abortion	B. Septic shock
_____ Severe diarrhea	C. Anaphylactic shock
_____ Insect sting	D. Shock from heart failure
_____ Laceration and bleeding	
_____ Internal injury with bleeding	
_____ Severe urinary tract infection	

- \_\_\_\_\_ Damage to the heart muscle
- \_\_\_\_\_ Burns to more than ten percent of the body
- \_\_\_\_\_ Infection following childbirth

5. State the clinical signs of shock.

- a. Adult's pulse:
- b. Child's pulse:
- c. Adult's blood pressure:
- d. Skin:
- e. State of consciousness:
- f. Urine output:

6. List six steps you should take before you treat a patient for shock.

7. Describe the emergency care of a patient in shock.

8. List the steps you would take when a patient develops an anaphylactic reaction.

9. Write what antibiotics in what dosages you would use to treat septic shock.



## 10. TRUE (T) or FALSE (F)

- \_\_\_\_\_ An open airway is of primary importance in all unconscious patients.
- \_\_\_\_\_ Dehydration can lead to unconsciousness.
- \_\_\_\_\_ Fainting is the least common cause of unconsciousness.
- \_\_\_\_\_ Severe poisoning does not cause loss of consciousness.
- \_\_\_\_\_ Diabetes can cause unconsciousness.
- \_\_\_\_\_ Stroke does not cause the patient to lose consciousness.

## 11. Explain why a person faints.

## 12. List eight causes of unconsciousness.

## 13. Arrange these steps for assessing an unconscious patient in the correct order.

- a. Examine the pupils
- b. Check for major trauma to other parts of the body
- c. Examine the pulse
- d. Look for paralysis or weakness
- e. Record your findings
- f. Determine the level of consciousness
- g. Obtain relevant history
- h. Examine the skin
- i. Examine the neck
- j. Look for signs of bleeding
- k. Examine the airway and breathing
- l. Observe the respiration

14. Why is an unconscious patient placed in a recovery position?
15. When would you not place an unconscious patient in the recovery position?



## REVIEW EXERCISE

### *Case Study 77*

Name of Patient:	Das, Bhagirath
Sex:	Male
Date of Birth:	16 February 1948
Date of Visit:	25 May 1980
Urine:	Dark yellow, small volume
Vital Signs:	Temperature 38° C Pulse 120 Respirations 32 Blood pressure 80/60 Weight 65 kg
Presenting Complaint and Medical History:	The patient had severe abdominal pain in the upper part of his abdomen below the sternum about six hours ago. Following this pain, he vomited reddish brown material twice. The pain has become worse. He cannot move. He is dizzy, anxious, and restless. He is thirsty. He feels he will die. He has some difficulty breathing. He has had gnawing, aching, and burning sensations in his abdomen at times for five years. The pain used to come thirty to sixty minutes after eating. The patient says he has passed tar-like stools during the last two to three days. He has never had this complaint before. He says that he had spicy food about an hour before the pain started.
Physical Examination:	The patient is anxious and restless. He is in pain. He lies without moving. He is not in a coma. He breathes rapidly, taking shallow breaths. His skin is cold and clammy. Pallor is present. His eyes are dull but the pupils are not dilated. Signs of muscle guarding and rebound tenderness occur on palpation of the abdomen. No abdominal percussion note can be heard. His bowel sounds are normal. His abdomen is not swollen. No signs of trauma are present.

Study the information given above, then answer these questions.

1. What is the diagnosis?
2. What information in the case study was most helpful to you when you made your diagnosis?
3. Was any information missing from the case study that would have helped you make the diagnosis?
4. How would you treat this patient?
5. What advice would you give this patient?

## REVIEW EXERCISE

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### *Case Study 78*

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Name of Patient:	Bhalla, Ramtivath		
Sex:	Male		
Date of Birth:	16 May 1960		
Date of Visit:	20 August 1980		
Urine:	Dark yellow, small volume		
Vital Signs:	Temperature	39° C	
	Pulse	120	
	Respirations	36	
	Blood pressure	70/50	
	Weight	58 kg	
Presenting Complaint and Medical History:	The patient was brought into the health center on a stretcher. He says he cannot stand without feeling dizzy. He has had twenty loose stools in the past two hours and has vomited five times. He has trouble		



breathing. He feels faint. He feels no pain in his abdomen or any part of the body. He feels thirsty. He remembers drinking some water from an unfamiliar well a day ago. He noticed some unpleasant feelings in his stomach then. Later he passed a watery stool with no mucus or blood in it. He started feeling nauseous and later vomited. After passing some stool, he started feeling weak and dizzy. Later he could not stand up. He felt very thirsty. The patient has never had this problem before.

Physical  
Examination:

The patient looks sick. He is not in pain but is restless and anxious. His skin is cold and clammy. His mucous membranes are pale. His breathing is shallow and rapid. Tenting of his skin occurs. His eyes are dull and sunken. His lips are dry. His heart sounds are normal. His chest is clear. No signs of tenderness were noted on palpating his abdomen. No enlarged organs were felt.

Study the information given above, then answer these questions.

1. What is the diagnosis?
2. What information in the case study was most helpful to you when you made your diagnosis?
3. Was any information missing from the case study that would have helped you make the diagnosis?
4. How would you treat this patient?
5. What advice would you give this patient?

## REVIEW EXERCISE

### *Case Study 79*

Name of Patient:	Tripathi, Radha		
Sex:	Female		
Date of Birth:	30 June 1972		
Date of Visit:	30 September 1980		
Vital Signs:	Temperature	39° C	
	Pulse	118	
	Respirations	26	
	Weight	22 kg	
Presenting Complaint and Medical History:	The patient is unconscious. She does not respond to her name or to being shaken. She has a fever.		
	The patient's mother says her daughter has had an upper respiratory tract infection and fever. The girl recently became irritable. She started having severe headaches. She says her neck hurts when she bends it. She began to act confused. She went to sleep about six hours ago after having a convulsion and now will not wake up. She has never had this problem before. She has not injured her head. She has not consumed any poison. Her relatives have never had this problem.		
Physical Examination:	The girl does not respond to her name or to being shaken. She does not respond to strong pain. She has no trouble breathing. She is not bleeding. Her pupils are equal and they react to light but are dilated. Her neck is stiff. On bending her neck, she draws her legs to her chest. She has no signs of any injury to the head or body. Her heart is normal. Her chest is clear. No enlarged organs were felt in her abdomen.		

Study the information given above, then answer these questions.

1. What is the diagnosis?



2. What information in the case study was most helpful to you when you made your diagnosis?
3. Was any information missing from the case study that would have helped you make the diagnosis?
4. How would you treat this patient?
5. What advice would you give this patient?

## REVIEW EXERCISE

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### Case Study 80

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Name of Patient:	Bedi, Madhusudan	
Sex:	Male	
Date of Birth:	7 January 1954	
Date of Visit:	30 June 1980	
Vital Signs:	Temperature	40° C
	Pulse	112
	Respirations	16
	Blood pressure	110/80
	Weight	65 kg
Presenting Complaint and Medical History:	<p>The patient is unconscious. He will not respond to his name, to shaking, or to strong pain.</p> <p>A relative says the patient began having fevers about three days ago. His temperature would rise and fall. He would feel cold, then he would start sweating. About four hours ago, he developed a sudden headache. He became confused. He started having convulsions, then he fell unconscious. The patient</p>	

has had fevers in the past, but never any convulsions. He has not injured his head. He has no recent history of any infection. His family has no history of convulsions.

Physical  
Examination:

The patient does not respond to his name, to shaking, or to strong pain. He is pale. He has no edema. His chest is clear. His heart sounds normal. His abdomen is flat and not tender. His spleen is palpable.

Study the information given above, then answer these questions.

1. What is the diagnosis?
2. What information in the case study was most helpful to you when you made your diagnosis?
3. Was any information missing from the case study that would have helped you make the diagnosis?
4. How would you treat this patient?
5. What advice would you give this patient?



# SKILL CHECKLIST

## Starting an Intravenous Infusion in a Peripheral Vein

This checklist has two purposes:

- 1) Students should use it as a guide to check their own skills or other students' skills.
- 2) Supervisors should use it when they evaluate how well students start an intravenous infusion in a peripheral vein.

After observing a student, enter a rating in the appropriate column.

Rating: 1 = Inadequate  
 2 = Needs improvement  
 3 = Satisfactory  
 4 = Above average  
 5 = Excellent

When starting an intravenous infusion in a peripheral vein, you should:

	YES	NO	RATING	COMMENTS
1. Collect equipment and materials				
2. Wash your hands with soap and water				
3. Tell the patient what you are going to do				
4. Seat the patient or have him lie down				
5. If the patient is a child, ask his parents to help you hold him gently but firmly				
6. Attach an intravenous infusion set to an intravenous infusion bottle and hang it from an intravenous stand				

	YES	NO	RATING	COMMENTS
7. Flush saline through the tubing and clamp off the tubing				
8. Fill the syringe with sterile solution and attach the needle to the syringe				
9. Clean the skin carefully with an antiseptic or soap and water				
10. Apply a tourniquet around the arm above the elbow. Let the arm hang down				
11. Look for a suitable vein between the wrist and the elbow. Avoid any vein that crosses a joint				
12. Hold the syringe with the needle hole facing up				
13. While stretching the skin with the thumb of one hand, insert the needle through the skin parallel to the vein				
14. Advance the needle .5 cm to 1 cm under the skin and gently enter the vein. Blood will flow into the syringe when you have entered a vein				
15. When you see blood in the syringe, attach the needle to the intravenous tubing and release the tourniquet at the same time				
16. Let the fluid run into the vein. If the area around the needle swells, remove the needle and put pressure on the area for five minutes. Restart the intravenous infusion in another vein or in the same vein at a different place in the arm				



	YES	NO	RATING	COMMENTS
17. When fluid is entering the vein, secure the needle to the skin. Loop the tubing and attach it to the arm with adhesive tape				
18. Tape the arm to an arm board so it cannot bend and displace the needle				
19. Regulate the infusion rate and check the infusion site every two hours to make sure that the fluid is not running into the skin				

## *Unit 3*

# **Blocked Airway, Acute Respiratory Failure, Snake Bite, and Poisoning**

### STUDENT GUIDE

#### OBJECTIVES

1. Describe the signs and symptoms of:
  - A blocked airway
  - Acute respiratory failure
  - Snake bite
  - Poisoning
2. Interview a patient or his relatives and examine the patient to diagnose a blocked airway, acute respiratory failure, snake bite, and poisoning.
3. Treat and care for patients suffering from a blocked airway, acute respiratory failure, snake bite, and poisoning. Relieve a blocked airway using back blows, manual thrusts, or your fingers. Provide mouth-to-mouth respiration.
4. Tell the patients and their families how to prevent a blocked airway, acute respiratory failure, snake bite, and poisoning.

#### LEARNING ACTIVITIES

1. Discuss the symptoms and signs of a blocked airway, acute respiratory failure, snake bite, and poisoning.
2. Practice taking a medical history and diagnosing a blocked airway, acute respiratory failure, snake bite, and poisoning, using patient information created for role-play by you and your fellow students.
3. Take part in a discussion of your role-play.

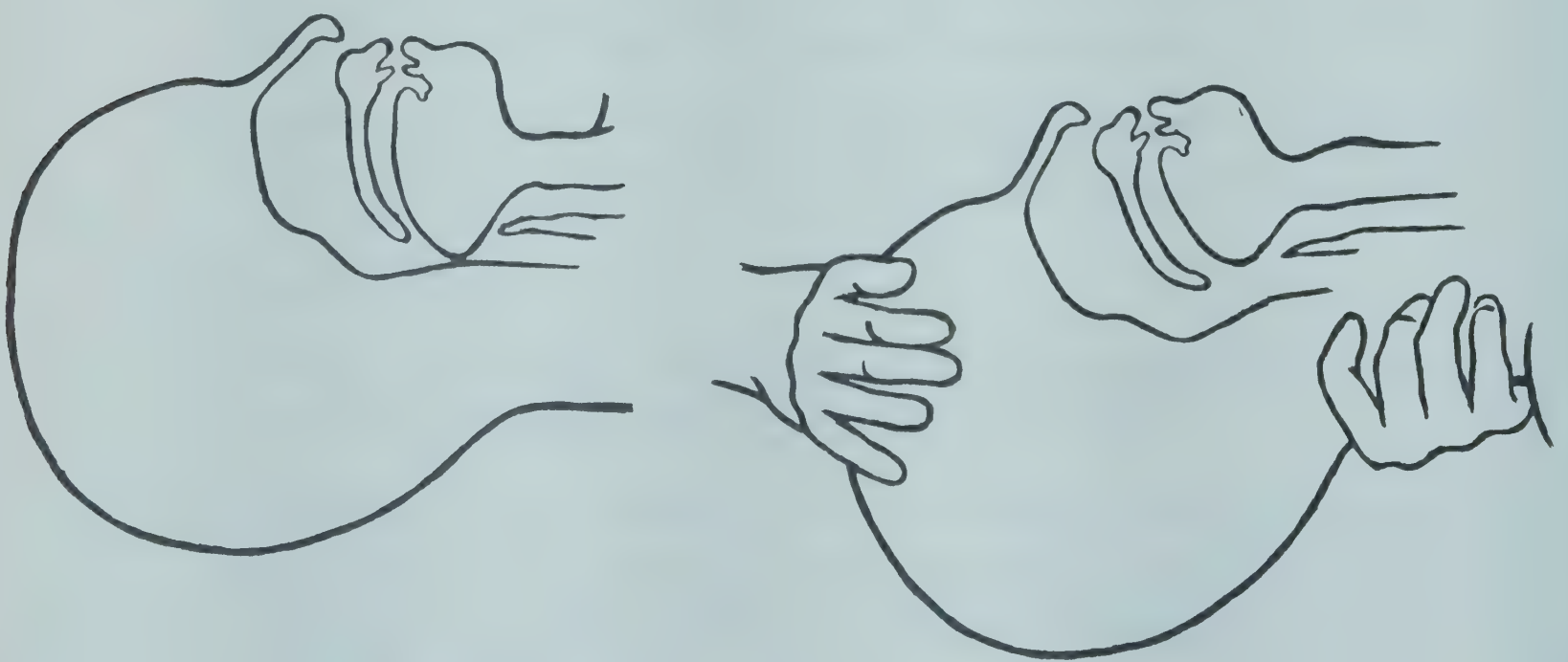


4. In your working group, identify the emergency condition in a case study given to you by your instructor. Also, outline the treatment and care procedures for the identified condition.
5. With your working group, present your case study findings to the rest of the class.
6. With your working group, design and deliver patient and family education messages about an emergency condition.
7. Observe, discuss, and practice the procedures for relieving a blocked upper airway.
8. Observe, discuss, and practice the procedures for mouth-to-mouth respiration.
9. With a small group of fellow students, be on call at a hospital emergency room or health center during the evening to observe how emergency problems are handled.

### 3.1 BLOCKED AIRWAY

The complete block of an upper airway is the most sudden and dangerous kind of respiratory problem which can occur. A foreign body often causes such a block. A large piece of food may stick in a person's throat while he is eating. Children may put marbles, coins, or other small, round objects into their mouths and choke. Infants sometimes choke on peanuts or pea-sized pieces of food. A complete airway block can kill a person in only five or six minutes.

Swollen tissues, severe burns, neck injuries, and even the tongue of an unconscious person can block an airway. Infections of the tonsils, epiglottitis, or mucous membranes of the throat may swell the throat tissues and block the flow of air. An abscess in a person's throat can also block his airway. A person who receives severe burns of the face may inhale hot smoke or gas. The hot smoke or gas can cause swelling and edema of the larynx. The swollen tissues can block the person's airway. An unconscious person's tongue can block his airway by falling back against the pharynx.



CROSS SECTION OF CLOSED AND OPEN AIRWAY

Always make sure a person is breathing before taking any medical history or performing any physical examination.



## CLINICAL PICTURE

### a. Presenting complaint

A person who is *choking* on a foreign body in his throat will be *gagging* and fighting for breath, or he will already be unconscious.

Swollen tissues rarely block a person's airway completely. The person, usually a child, will have trouble breathing. His effort to breathe may cause *anxiety* and pain.

A person with severe burns on his face will have great trouble breathing. He may be unconscious. He may not be breathing at all.

A person with a neck injury may be gagging because of swollen tissues, blood, or mucus blocking his throat. A severe neck injury may also collapse the trachea and block the airway.

An unconscious person may be *gasping* as he tries to draw air into his lungs. The block usually is his tongue which falls back against his throat and blocks his airway.

### b. Medical history

A person with a blocked airway may have a history of a foreign body in his throat, a throat infection such as diphtheria or croup, severe burn and inhalation of hot gas or smoke, strangulation, trauma to the neck, or unconsciousness.

### c. Physical examination

When a person presents with a blocked airway, you may see him gagging. Check his nailbeds and lips for *cyanosis*. Check for throat infection. Check for any signs of injury to the neck. Check for burns. Check the patient's consciousness.

## COURSE AND COMPLICATIONS

The patient will collapse and become unconscious if a complete airway block is not cleared within two to three minutes. The brain cells will die if they do not get enough oxygen for more than five minutes. All respiratory effort will stop when the brain cells die. The patient will die.

## PATIENT CARE

First, clear the person's airway. Use back blows, manual thrusts, or your fingers to remove a foreign body that is blocking a person's airway. Back blows and manual thrusts increase pressure on the chest.

The sudden force helps dislodge the foreign body. Start the person's breathing again. See Patient Care Procedures.

Begin treating any infection that blocks or threatens to block a patient's airway. Transfer the patient to a hospital. See Patient Care Guides.

Start mouth-to-mouth respiration on a patient who has suffered severe burns that block his airway. Rapidly transfer him to a hospital. See Patient Care Procedures.

Clear blood and mucus from the throat of a person who has suffered a neck injury that blocks his airway. Begin mouth-to-mouth artificial respiration. Rapidly transfer him to a hospital. See Patient Care Procedures.

If an unconscious person is breathing, transfer him to the hospital in recovery position. See Patient Care Procedures.

### 3.2 ACUTE RESPIRATORY FAILURE

Acute respiratory failure occurs when something interferes with a person's normal process of breathing. The person's body tissues do not get the oxygen they need, and the tissues begin to die. Brain tissues die first because they are the most sensitive. Severe brain damage will affect the normal function of the lungs, and the person will stop breathing.

Acute respiratory failure occurs without any airway block. The most common causes of acute respiratory failure are drowning, poisoning, electric shock, traumatic shock, lack of oxygen, and carbon monoxide poisoning.

Drowning causes acute respiratory failure by cutting off the supply of oxygen to the brain. Drowning victims have stopped breathing when they are taken from the water. The person may be able to start breathing again with help if the brain damage caused by the lack of oxygen is not severe.

Poisoning causes acute respiratory failure when the drug or chemical affects breathing. For example, an overdose of some sleeping pills can cause severe brain depression that will lead to acute respiratory failure.



Electric shock and shock caused by trauma can both cause acute respiratory failure. Electric shocks abruptly stop normal body functions, including breathing and heartbeat. If these are restored without delay, the person may not be permanently affected. Shock caused by trauma gradually leads to respiratory failure. The person's breathing becomes weaker by degrees until it stops. Brain damage may have already occurred by that time.

Lack of oxygen in the air will cause gradual brain damage as the person uses up the last of the oxygen available. The brain becomes starved for oxygen and fails to maintain body functions, including breathing. This could happen to a person trapped in a small space that has no free flow of air.

A poorly burning fire produces carbon monoxide. Carbon monoxide poisoning prevents a person's blood from carrying oxygen. The person's brain cannot survive for long without fresh oxygen, so its tissue begins to die and brain damage occurs. When the brain damage is severe enough to affect a person's breathing, acute respiratory failure occurs.

#### CLINICAL PICTURE

##### a. Presenting complaint

A person with acute respiratory failure *will not be breathing*. He will be unconscious.

##### b. Medical history

Do not delay treatment of acute respiratory failure to determine its cause. After you have started the patient's breathing, ask about the condition in which he was found. Was he in water? Was he near any electrical wire? Was he taking any medicines? Was an empty bottle of medicine found by his side? Ask whether the patient had any accident or any injury to his head. Ask whether he was drinking alcohol. Ask whether he was found in a closed room with a burning fire.

##### c. Physical examination

The patient suffering acute respiratory failure will be *unconscious*. You will not see any movement of his abdomen or chest. You will not hear any movement of the air through his mouth or nose. His pulse may be weak and rapid, slow and irregular, or absent. His blood pressure may be low. His skin will be cool. Check for *cyanosis*. Also check his pupils. His pupils may be dilated and react slowly to light. He will have no reaction to pain.



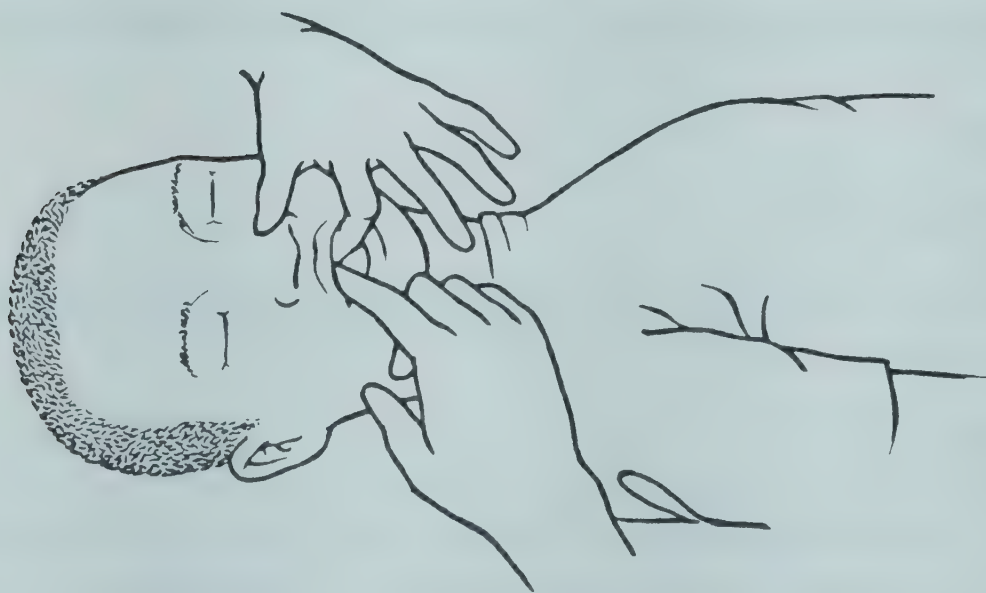
Look for signs of injury to the patient's head and neck. Look for signs of shock, bleeding, or dehydration. Look for burns on the hands, a sign of an electric shock. The patient's lips and nail beds will be pink or red if he suffered carbon monoxide poisoning.

### COURSE AND COMPLICATIONS

Many of the conditions that lead to acute respiratory failure will stop a person's heartbeat. Death can occur in two to three minutes without quick treatment. The time needed to revive a patient who has suffered acute respiratory failure can be long.

### PATIENT CARE

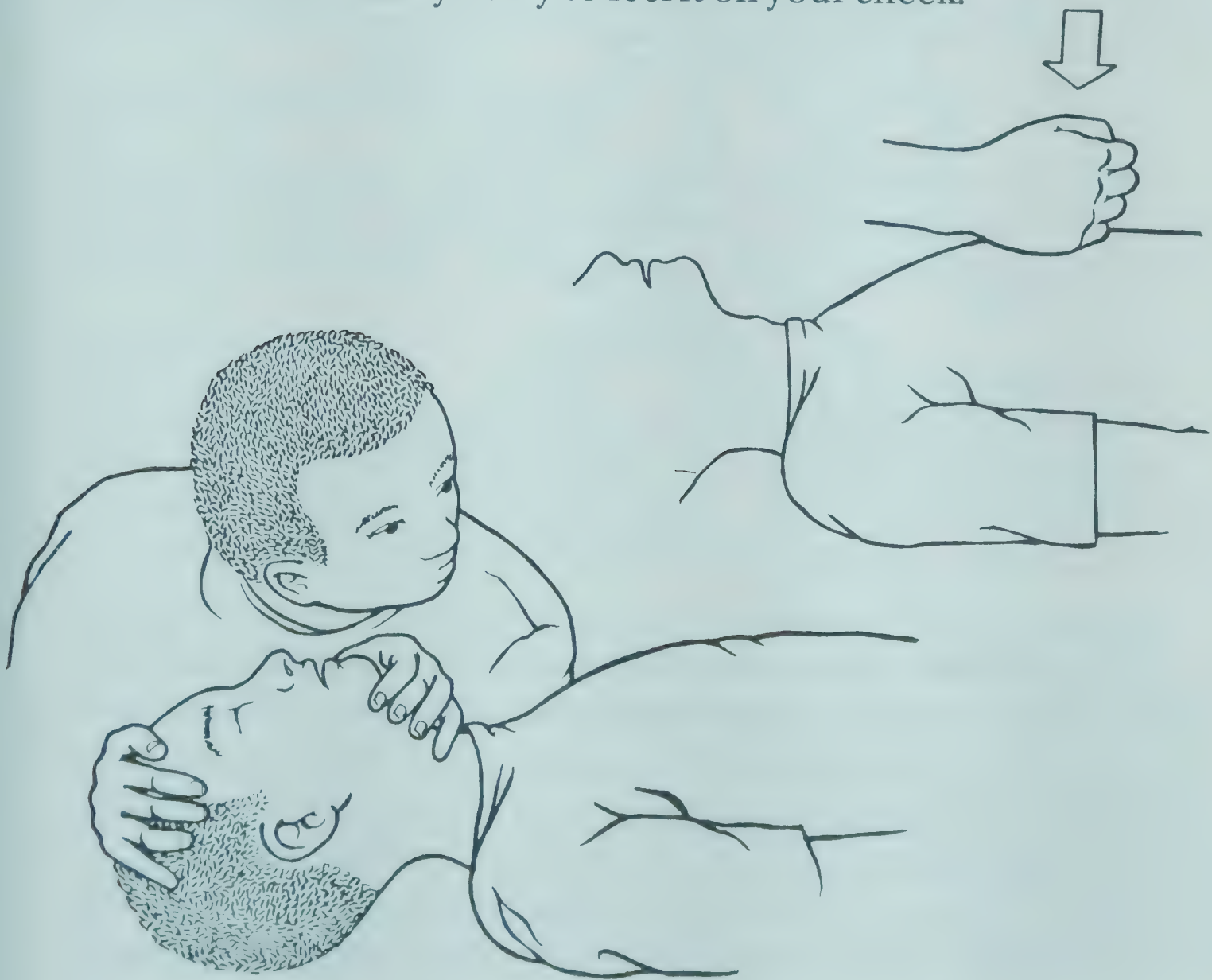
First open the airway of a person suffering acute respiratory failure. Then start mouth-to-mouth respiration. Check the patient's carotid pulse by placing your fingers on his neck beside the trachea.







Use your fist to give the patient a firm thump on the lower third of his sternum if you do not feel any pulse. Sudden pressure on the chest may start the heart beating properly. Continue mouth-to-mouth respiration for at least fifteen minutes. Check the patient every few minutes to see whether he has begun to breathe on his own. Look at the patient's chest and abdomen for movement. Listen carefully for his breath while you try to feel it on your cheek.



If the patient has no carotid pulse or other sign of heartbeat and is not breathing on his own after fifteen minutes, stop your efforts to revive him. Continue mouth-to-mouth respiration as long as you feel a heartbeat and until you can transport the patient to a hospital.

### 3.3 SNAKE BITE

Poisonous snakes live in almost every country. Snake poison, or venom is stored in small glands in the snake's head. The snake injects its venom into its victim through two hollow fangs.

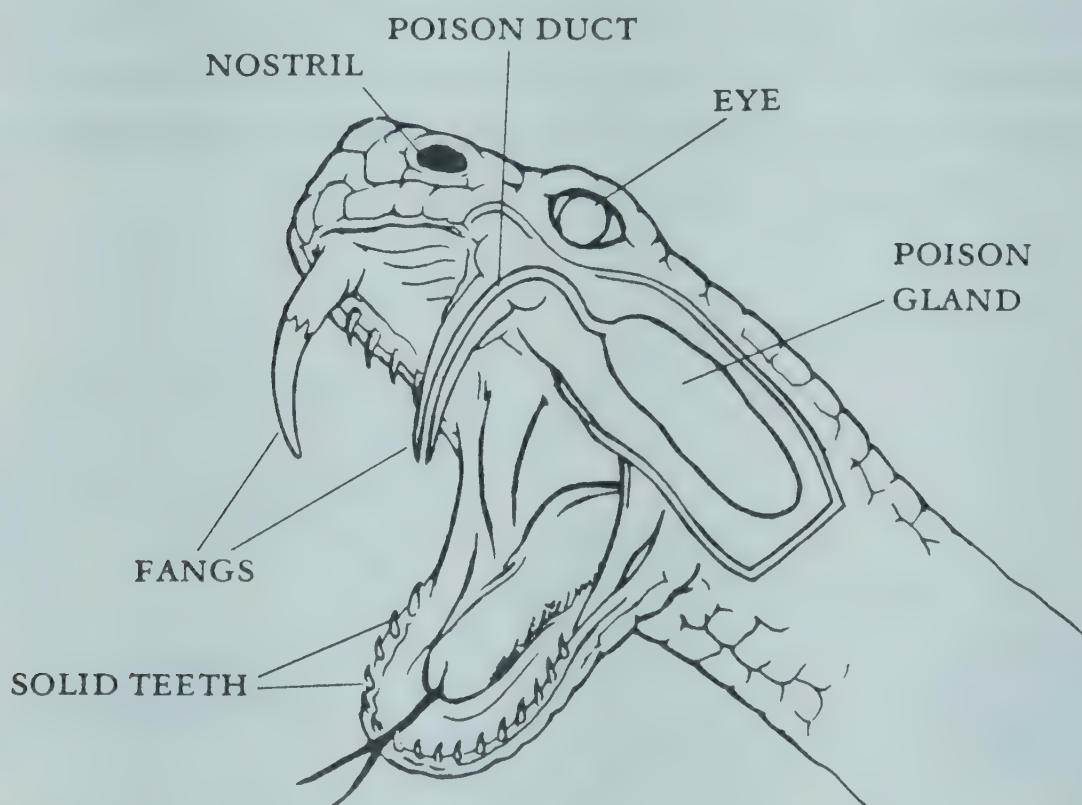


DIAGRAM OF SNAKE HEAD

Venoms from different kinds of snakes have different effects. Some snake bites affect only the area around the bite. The tissue will swell and the skin will become discolored. Other snake bites affect not only the area around the bite but distant parts of the body as well. Some snake venoms will make the gums bleed. Some will affect the urinary tract so blood appears in the urine. Some will affect a person's ability to talk, swallow, or breathe. Snake bites can cause shock and unconsciousness.

#### CLINICAL PICTURE

##### a. Presenting complaint

The patient bitten by a snake will be anxious and frightened. He



will feel severe *pain at the bite*. The patient may feel nauseous. He may say that he *cannot breathe well*. He may have seen *blood in his urine*. He may complain of dim vision.

b. Medical history

Find out when the snake bite occurred. Obtain a description of the snake. Decide what kind of snake bit the patient.

Find out whether the patient was wearing boots or long pants.

Find out whether the snake bit through the person's pants or boot or whether it bit directly into the skin. This information will help a doctor decide on a treatment.

c. Physical examination

Look for *bite marks*, *swelling*, and *discoloration* when you suspect a patient has suffered a snake bite. Examine him for signs of shock, *bleeding* from the *mouth* or *nose*, and increased salivation. Check the patient's state of consciousness. He may be going into a coma.

### COURSE AND COMPLICATIONS

Snake bites can cause bleeding into the kidney and urine. Some snake bites paralyze the muscles. Some affect a person's ability to breathe. A snake bite can cause unconsciousness, coma, and death.

### PATIENT CARE

Calm the person who has been bitten by a snake. Tell him to lie down. Do not let him walk. Movement and excitement increase blood circulation and will increase the rate at which the venom is absorbed into the blood stream.

Clean the area of a snake bite with soap and water. Apply a light dressing. Make a splint and apply it to the bitten arm or leg. The splint will help reduce movement. Keep the arm or leg lowered.

Apply a tourniquet between a bite on the arm or leg and the heart. Use a wide strip of cloth. Do not tighten the cloth so much that it completely cuts off the blood supply. Regularly check the pulse and the skin temperature of the affected arm or leg. Loosen the tourniquet if blood circulation is cut off.

Do not give the patient aspirin, alcohol, or sedatives. Aspirin and sedatives may increase the effects of the venom. Alcohol increases circulation and may speed up absorption of the venom into the blood stream.



Antivenin is the most effective treatment for poisonous snake bites. Learn what types of antivenin you can obtain and where you can obtain them. Transfer the patient to a hospital or other source of antivenin as rapidly as possible. Antivenin is most effective if it is given within a few hours after the bite.

You need not refer a patient with snake bite if the bite is already twelve hours old and if no signs of poisoning are apparent. Give patients you do not refer tetanus toxoid. See Patient Care Guides.

#### PREVENTION

Urge people who live in areas with many poisonous snakes to wear long pants and boots. They should avoid working near dense jungles or bush. They should avoid working in bushy areas after sunset. They should always use pathways to avoid walking through bushes.

### 3.4 POISONING

A poison is anything that can cause harm when it enters the body. A poison can enter the body through the skin or through the mouth or nose when a person eats, drinks, or breathes it. Some poisons are dangerous in small doses. Others are dangerous only in large doses. Think of poisons in these four groups:

- Petroleum poisons

- Chemical poisons such as insecticides

- Acid or caustic poisons

- All other drugs and chemicals

Petroleum poisons include gasoline, kerosene, and other petroleum products. They can affect the nervous system, the liver, the kidneys, bone marrow, lungs, and the gastrointestinal system.

Insecticides, the chemical poisons used to kill insects, are dangerous because they can enter the body through the skin and because they are harmful in small doses. Adults are poisoned when they work with insect powders or sprays and fail to wash afterward. The poison on their clothes can enter the body through their skin. Poison dust or spray in the air



can enter their body through the mucous membranes, or through the respiratory tract. Children can be poisoned by playing with carelessly stored insect powders or sprays.

Acid or caustic poisons are often used as cleaning agents. They are found in many homes. Lye, for example, which is used to make soap, can cause severe burns. Many children suffer severe poisoning by playing with or drinking cleaning agents.

### CLINICAL PICTURE

#### a. Presenting complaint

Petroleum products cause nausea, vomiting, dizziness, **trouble breathing**, unconsciousness, and convulsions. A person who swallows or breathes in some of a petroleum product may have any of these symptoms.

Insecticides cause nausea, vomiting, **blurry vision**, headaches, trouble breathing, unconsciousness, and convulsions.

Acid or caustic poisons cause **severe pain** in the **mouth, throat, chest, and stomach**. The person, usually a child, who drinks or eats a caustic poison may vomit blood.

Symptoms of other kinds of poisoning depend on the kind of drug or poison taken.

#### b. Medical history

When you suspect a patient has been poisoned, find out what kind of poison was taken and when it was taken. Ask about any history of attempted suicide or work with insecticides. Find out whether the patient ate or drank anything that had a bad or unusual taste. Ask whether the person works with petroleum products. Ask whether petroleum products, soaps, or cleaning agents are stored in the home or where children play.

Find out how much of any petroleum product the patient ate or drank. Ask whether the patient who ate or drank a petroleum product has vomited. Find out whether the patient breathed in any of the petroleum product.

Ask about the patient's reactions to the poison. Has he had convulsions? Did he vomit? Has he been sweating and drooling? Suspect insecticide poisoning if the patient has been spraying crops or if insect poisons have contacted his clothes.



Suspect poisoning from an acid or caustic material if the patient feels a severe burning pain in his mouth, throat, chest, or stomach.

c. Physical examination

First check any patient you suspect is poisoned for signs of shock. Check his vital signs. Smell his breath. Examine his lips, mouth, and skin for burns.

The *breath* of a person who has swallowed a petroleum product will *smell like petroleum*. His respirations may be slow. His pulse may be fast and irregular. His blood pressure may be low.

The breath of a person who has swallowed an insecticide will have the same sour smell as that poison. His skin and clothing may smell of the poison if he has absorbed it while working. His respirations, pulse, and blood pressure will all be low. He will *sweat* and *salivate freely*. His *muscles* will *twitch*. His *pupils* will *constrict* to pinpoint size and will *not react to light*. He may be unconscious. He may have convulsions.

Acid or caustic poisons will *burn* the *lips* and *mouth*. The patient will be anxious or in pain. His respirations will be rapid and shallow. His pulse will be rapid and weak. His blood pressure will rapidly fall. Look for signs of peritonitis.

## COURSE AND COMPLICATIONS

All severe poisoning can lead to shock, unconsciousness, and death. Petroleum products damage the lungs and nervous systems. Inhaling or swallowing a petroleum product irritates the lungs and can lead to bronchitis, pneumonia, and death. Poisoning from insecticides damages the nervous system. Acid and caustic poisons can cause internal bleeding, peritonitis, and scarring of the throat and esophagus.

## PATIENT CARE

First clear the airway of any person who has been poisoned. Be sure he is breathing. Treat him for shock. Treat him for the poison, then rapidly transfer him to a hospital.

Flush out the patient's stomach if you suspect that he has swallowed three or more mouthfuls of kerosene, gasoline, or other petroleum product. You can flush out his stomach by passing a nasogastric tube



or by giving him salted water then making him vomit. See Patient Care Procedures.

Do not make the person vomit if he has swallowed only a mouthful or two of a petroleum product. The risk of inhaling some of the vomit is greater than the benefits of flushing this small amount out of the stomach.

Give atropine to a patient who suffers poisoning from insecticides. See Patient Care Guides.

Dilute an acid or caustic poison with milk or any other liquid. Do not make the person vomit.

Dilute a drug or other chemical poison with salted water or give the patient ipecac syrup. See Patient Care Guides. Make the person vomit or pass a nasogastric tube to flush the stomach. See Patient Care Procedures.

## PREVENTION

More children than adults are poisoned. Children are curious. They like to smell, taste, and feel everything around them. Children learn this way. Help make areas where they play safe from poison. Urge parents to keep medicines, insect poisons, kerosene, cleaners, and other chemicals out of children's reach. Tell parents not to use soda bottles for dangerous liquids, like kerosene. Urge them to throw old medicines away in a safe place.

Insect poisons are harmful in very small amounts. Adults often do not know how dangerous these chemicals can be. Explain why a person should wash his hands carefully after using insect poisons or the box or jar they came in.

Visit the homes of people who come to the health center with a poisoning problem. Help the family prevent any other poisoning accidents.

# REVIEW QUESTIONS

## Blocked Airway, Acute Respiratory Failure, Snake Bite, and Poisoning

1. In the space beside each problem, write the letter identifying the possible result of the problem.

PROBLEM	POSSIBLE RESULT OF THE PROBLEM
_____ A child inhales a foreign body	A. Oxygen does not reach the brain
_____ A person chokes on a piece of food	B. Tissues of the throat and epiglottis swell
_____ Trauma to the face or neck damages tissues	C. The person receives a shock and stops breathing
_____ Drowning	D. The airway becomes blocked
_____ Acute throat infection	E. A swollen membrane blocks the airway
_____ Electric shock	F. Gas prevents the blood from carrying oxygen
_____ Throat burns caused by hot gas and smoke	
_____ A person is caught in a tight enclosure	
_____ Shock caused by bleeding or head injury	
_____ Carbon monoxide poisoning	

2. Match each set of symptoms and signs with its possible cause.

SYMPTOMS	SIGNS	CAUSE
_____ Choking	The patient tries to breathe but his upper airway is blocked	



	SYMPTOMS	SIGNS	CAUSE
_____	Patient pulled from water	Clothes wet, upper airway has water in it	A. Electrical shock
_____	Trauma to face and neck	The patient is making a respiratory effort but his upper airway is blocked	B. Foreign body blocking the airway
_____	Child has a fever and increasing trouble breathing	A membrane blocks the upper airway	C. Acute infection of the upper respiratory system
_____	Child inhaled a peanut or a raisin	The child is making a respiratory effort but his upper airway is blocked	D. Near drowning
_____	Patient touched an electric wire	His upper and lower airway are clear. He is not breathing	E. Carbon monoxide poisoning
_____	Patient found in a closed room with a poorly burning fire	His upper and lower airway are clear. His lips and nail beds are blue	

3. Describe two signs of an acute respiratory problem.

4. List five causes of acute respiratory failure.

5. What sign would indicate that body tissues are not receiving enough oxygen? Where would you look for this sign?

6. You see a person who is not breathing. His airway is clear. What would you do?
7. Describe the steps in performing mouth-to-mouth respiration on an adult.
8. Describe the effects of a snake bite near the wound and at distant parts of the body
9. TRUE (T) or FALSE (F)
  - \_\_\_\_\_ You do not need the description of a snake that bites a patient.
  - \_\_\_\_\_ Snake bites are rarely fatal
  - \_\_\_\_\_ You should give a person bitten by a snake aspirin, alcohol, or sedatives.
  - \_\_\_\_\_ Antivenin is most effective when it is given within a few hours of the bite.
  - \_\_\_\_\_ You do not need to give tetanus toxoid to victims of snake bites.
10. What is a poison?
11. List three common causes of poisoning and the signs and symptoms of each.



12. Match the items in the first column with those in the second column. Place the letter of your answer in the space provided.

_____ Lye	A. Induce vomiting
_____ Paraffin	B. Do not induce vomiting
_____ Paint thinner	
_____ Insecticide	
_____ Kerosene	
_____ Lethargy or coma	
_____ Poisonous plants	
_____ Aspirin poisoning	

13. TRUE (T) or FALSE (F)

- \_\_\_\_\_ Preventing poisoning is more important than curing it.
- \_\_\_\_\_ Keeping poisons in low cupboards is safe.
- \_\_\_\_\_ Throw out old medicines in a safe place.
- \_\_\_\_\_ Soda bottles are safe for storing kerosene.
- \_\_\_\_\_ Do not flush out the stomach of a patient who has swallowed an acid or burning poison.

14. A woman arrives at your clinic in a very drowsy condition. She responds to strong shaking. Her relative tells you that she found an empty bottle of sleeping pills on the table near the woman's bed. How will you manage the patient?
15. A child has accidentally swallowed some lye. His lips and mouth are burned. He has severe pain in his upper abdominal area. How will you manage the patient?

## REVIEW EXERCISE

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### *Case Study 81*

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Name of Patient:	Rai, Krishna
Sex:	Male
Date of Birth:	17 May 1956
Date of Visit:	27 August 1981
Vital Signs:	Temperature 37° C Pulse 58
Presenting Complaint and Medical History:	The patient was eating rice and fish when he suddenly choked. He started coughing and gasping.
Physical Examination:	The patient is weakly gasping. His lips and nail beds are blue. He is limp. He does not respond to strong pain. His pupils are dilated, but they react to light.

Study the information given above, then answer these questions.

1. What is the diagnosis?
2. What information in the case study was most helpful to you when you made your diagnosis?
3. Was any information missing from the case study that would have helped you make the diagnosis?
4. How would you treat this patient?
5. What advice would you give this patient?



## REVIEW EXERCISE

### --- Case Study 82 ---

Name of Patient: Singh, Rupinder  
Sex: Male  
Date of Birth: 3 January 1976  
Date of Visit: 9 November 1981

Vital Signs:      Temperature    36° C  
                         Pulse                    80  
                         Respirations    absent

Presenting Complaint and Medical History:    The patient was helping his mother wash clothes in the pond. He slipped into the water. His mother pulled him from the water a few minutes later. He was not breathing. His mother said he will not respond to his name, to shaking, or to strong pain.

Physical Examination:    The small child is making no respiratory effort. His clothes are wet. His lips and nail beds are blue. He has no breath sounds.

Study the information given above, then answer these questions.

1. What is the diagnosis?
2. What information in the case study was most helpful to you when you made your diagnosis?
3. Would you do a physical examination and measure the vital signs before starting treatment?
4. How would you treat this patient?
5. What advice would you give this patient's mother?

## REVIEW EXERCISE

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### Case Study 83

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Name of Patient:	Bajaj, Prajapati
Sex:	Female
Date of Birth:	3 February 1959
Date of Visit:	7 August 1980
Vital Signs:	Temperature 37° C
	Pulse 90
	Respirations 10
	Blood pressure 80/60
	Weight 50 kg
Presenting Complaint and Medical History:	A snake bit the patient on the left leg about two hours ago. She was walking through the bush just outside the village. She feels pain at the site of the bite. She feels weak and drowsy. She has trouble breathing. Her speech is slurred. She has a headache. She feels frightened.
Physical Examination:	The patient has two puncture wounds close to one another on the left leg. The area is swollen and tender. Her eyelids are droopy. Her breathing is slow. Saliva dribbles from her mouth. Her heart sounds are normal. Her chest is clear.

Study the information given above, then answer these questions.

1. What is the diagnosis?
2. What information in the case study was most helpful to you when you made your diagnosis?
3. Was any information missing from the case study that would have helped you make the diagnosis?
4. How would you treat this patient?
5. What advice would you give this patient?



## REVIEW EXERCISE

### *Case Study 84*

Name of Patient: Adebayo, Fred  
Sex: Male  
Date of Birth: 17 August 1954  
Date of Visit: 9 July 1982

Vital Signs:      Temperature      36° C  
                         Pulse                      60  
                         Respirations      12  
                         Blood pressure    110/80  
                         Weight                60 kg

Presenting Complaint and Medical History: A relative reports that the patient drank liquid from an old medicine bottle. The patient's vision is blurred. He has a headache. He feels nauseous and has vomited. He has trouble breathing. He feels dizzy and is very anxious.

Past medical history: He has not been taking any medicine or drugs. He was not sick in the last week.

Family history: No one in the family has had any similar complaints.

Physical Examination: The patient looks anxious. His respirations are slow. The pupils of his eyes are constricted but they react to light. He drools and sweats freely but has no fever. He has a strong odor on his breath. His heart sounds are normal.

Study the information given above, then answer these questions.

1. What is the diagnosis?
2. What information in the case study was most helpful to you when you made your diagnosis?
3. Was any information missing from the case study that would have helped you make the diagnosis?
4. How would you treat this patient?
5. What advice would you give this patient?

# REVIEW EXERCISE

## Case Study 85

Name of Patient: Adegensis, Bimbo

Sex: Female

Date of Birth: 16 May 1977

Date of Visit: 19 March 1980

Vital Signs: Temperature 37° C

Pulse 112

Respirations 20

Weight 18 kg

Presenting Complaint and Medical History: The child drank an unidentified liquid from a soda bottle about three hours ago. She found the bottle beneath the kitchen washstand. Her mother does not know its contents. The child has been vomiting. No blood was seen in the vomit. The child became drowsy. She does not respond to shaking. She responds to pain but falls back into unconsciousness.

Past medical history: The child has not been taking any medicine. She was not bitten by any snake or animal. She did not have any head injury. She has not been sick recently.

Physical Examination: The small child does not respond to shaking. Her pupils are slightly dilated. They react to light. She takes slow, shallow breaths. She has a distinct odor on her breath but no burns around her mouth. She has some cyanosis. Her heart sounds are normal.

Study the information given above, then answer these questions.

1. What is the diagnosis?
2. What information in the case study was most helpful to you when you made your diagnosis?
3. Was any information missing from the case study that would have helped you make the diagnosis?
4. How would you treat this patient?
5. What advice would you give this patient's parents?



## REVIEW EXERCISE

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### Case Study 86

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Name of Patient: Kaur, Janaki  
Sex: Female  
Date of Birth: 17 April 1972  
Date of Visit: 13 July 1979

Vital Signs:      Temperature    37° C  
                         Pulse                138  
                         Respirations    28  
                         Weight            28 kg

Presenting Complaint and Medical History: The young patient has pain in her chest, upper abdomen, mouth, and throat. She has vomited blood. She drank from a bottle that contained a cleaning agent.

Past medical history: She has no history of fever, diarrhea, or infection.

Physical Examination: The girl is anxious and restless. Her respirations are rapid and shallow. She has burns around her lips. The mucous membranes in her mouth are white with red areas. Her heart sounds are normal. Her upper abdomen is very tender. She shows signs of muscle guarding.

Study the information given above, then answer these questions.

1. What is the diagnosis?
2. What information in the case study was most helpful to you when you made your diagnosis?
3. Was any information missing from the case study that would have helped you make the diagnosis?
4. How would you treat this patient?
5. What advice would you give this patient?

# SKILL CHECKLIST

## Removing a Foreign Body from a Person's Throat with Your Fingers

This checklist has two purposes:

- 1) Students should use it as a guide for checking their own skills or other students' skills.
- 2) Supervisors should use it when they evaluate how well students remove a foreign body from a person's throat with their fingers.

After observing a student, enter a rating in the appropriate column.

Rating: 1 = Inadequate  
 2 = Needs improvement  
 3 = Satisfactory  
 4 = Above average  
 5 = Excellent

When removing a foreign body from a person's throat with your fingers, you should:

	YES	NO	RATING	COMMENTS
1. Open the person's mouth by crossing your thumb and index finger, bracing them on the person's teeth, and prying open his jaw				
2. Reach inside the person's mouth with the index finger of your free hand				
3. Move your index finger along the choking person's cheek to the base of his tongue				
4. Hook the foreign body with the tip of your finger, being careful not to push it deeper in the person's throat				
5. When you can see the foreign body, grasp it with your free hand and remove it				



# SKILL CHECKLIST

## Using Back Blows to Clear a Child's Blocked Airway

This checklist has two purposes:

- 1) Students should use it as a guide for checking their own skills or other students' skills.
- 2) Supervisors should use it when they evaluate how well students use back blows to clear a child's blocked airway.

After observing a student, enter a rating in the appropriate column.

Rating: 1 = Inadequate  
 2 = Needs improvement  
 3 = Satisfactory  
 4 = Above average  
 5 = Excellent

When using back blows to clear a child's blocked airway:

	YES	NO	RATING	COMMENTS
1. Lift the child, holding him around his waist with one hand so he faces down				
2. Use the heel of your free hand to strike between his shoulder blades at least eight times				
3. Clear his mouth and throat with your fingers				
4. Check for breathing and repeat the procedure, if necessary				

# SKILL CHECKLIST

## Using Manual Thrusts to Clear an Adult's Blocked Airway

This checklist has two purposes:

- 1) Students should use it as a guide for checking their own skills or other students' skills.
- 2) Supervisors should use it when they evaluate how well students use manual thrusts to clear an adult's blocked airway.

After observing a student, enter a rating in the appropriate column.

Rating: 1 = Inadequate  
 2 = Needs improvement  
 3 = Satisfactory  
 4 = Above average  
 5 = Excellent

When using manual thrusts to clear an adult's blocked airway:

	YES	NO	RATING	COMMENTS
1. Stand behind the person if he is seated or standing				
2. Reach around the person with your arms				
3. Make a fist with one hand and put it over the person's diaphragm between the lower edge of his sternum and his umbilicus				
4. Grasp the wrist of your fisted hand				
5. Press the fist into the person's abdomen with at least eight quick, upward thrusts				
6. Turn the choking person on his back if he is lying on the ground				



	YES	NO	RATING	COMMENTS
7. Kneel astride the person's hips, facing his chest				
8. Put the heel of one hand on the person's abdomen and cover it with your free hand				
9. Press the heel of your hand into the person's abdomen with at least eight quick, upward thrusts				

# SKILL CHECKLIST

## Performing Mouth-to-Mouth Respiration

This checklist has two purposes:

- 1) Students should use it as a guide for checking their own skills or other students' skills.
- 2) Supervisors should use it when they evaluate how well students perform mouth-to-mouth respiration.

After observing a student, enter a rating in the appropriate column.

Rating: 1 = Inadequate  
 2 = Needs improvement  
 3 = Satisfactory  
 4 = Above average  
 5 = Excellent

When performing mouth-to-mouth respiration, you should:

	YES	NO	RATING	COMMENTS
1. Remove any foreign body from the person's mouth				
2. Open his airway by tilting his head back while supporting his neck				
3. Loosen the clothing around his neck and waist				
4. Pinch an adult's nose with your fingers				
5. Open your mouth wide and take a deep breath				
6. Seal your lips around the person's mouth				
7. Blow into the lungs until his chest rises				
8. Continue the respirations at your natural rate of breathing				



YES NO RATING COMMENTS

9. If the chest does not rise when you blow air in, check again for any foreign body and manually remove it from the mouth or throat. Also check the tilt of the patient's head				
10. When your patient is a child, clear his mouth, tilt his head back, and seal your lips around his nose and mouth				
11. Gently puff air from your cheeks into the child's lungs four times. Do this as rapidly as possible until his chest rises				
12. Stop to allow the child's chest to fall				
13. Allow twenty to twenty-five puffs a minute for a child				
14. Continue mouth-to-mouth respirations until natural breathing begins again				

## *Unit 4*

# **Assessing a Patient Who Has Suffered Trauma**

### STUDENT GUIDE

#### OBJECTIVES

1. Describe these signs of trauma:

Spurting bright red blood

Dark red blood

Limited movement of a joint distal to a wound or bite

Loss of sensation distal to a wound or bite

Jagged cut

Clean cut

Puncture

Deformity of a limb or joint

Black-and-blue skin

Reddened skin

Oozing blisters

White or charred skin

Loss of vision

Abnormal reaction of pupils to light

Decreased consciousness

Depression in the skull

Watery discharge or blood from the nose or ears

Paralysis of arms or legs

Absent or decreased breath sounds

Frothy bubbles from a chest wound

Collapse of the chest on breathing in

Expansion of the chest on breathing out

Rebound tenderness

Muscle guarding

Absence of bowel sounds



2. Recognize the signs of trauma when you see or hear them in a patient.
3. Interview a patient or his relative about the patient's trauma.
4. Examine a patient who has suffered trauma.
5. Record your findings in the recommended way.

### LEARNING ACTIVITIES

1. Discuss the abnormal physical signs of trauma to the body.
2. In your working group, write ten questions about the signs of trauma to the body.
3. Ask another working group your ten questions.
4. Discuss the importance of history taking in cases of trauma to the body.
5. Observe and discuss an instructor's demonstration of how to take a medical history and perform a physical examination of a patient with trauma to the body.
6. Practice taking medical histories and performing physical examination procedures with another student, using case studies for patient information.
7. With a small group of fellow students, be on call at a hospital emergency room or health center during the evening to observe how emergency problems are handled.

## 4.1 SIGNS OF TRAUMA

Trauma is a sudden and severe injury. Traumatic injuries are often serious and usually require immediate medical care. You must learn to quickly assess a traumatic injury to plan your first aid and follow-up care. You must also learn to look for more than one sign of trauma to find the extent of the injuries a person has suffered. These signs will help you diagnose the kind of injuries and the severity of the injuries a person has suffered.

### *Spurting, bright red blood*

Blood spurts from lacerations involving an artery because the blood is being pumped directly from the heart. Each time the heart beats, more blood spurts out. The blood from an artery will look bright red because it is carrying fresh oxygen.

### *Dark red blood*

Blood from lacerations involving a vein looks dark red because the blood carries waste products and little oxygen. The blood does not spurt because it is traveling back toward the heart and is less affected by the heartbeat.

### *Limited Movement of a Joint Distal to a Wound or Bite*

Muscles and tendons move the parts of the body. Damage to a muscle or tendon will affect movement distal to the wound. Distal refers to the part of the body located on the far side of its point of origin or attachment. For example, the fingers are distal to the wrist, the wrist is distal to the elbow, the elbow is distal to the shoulder, the ankle is distal to the knee, and so on. A damaged muscle or tendon will affect movement distal to the injury. To check for damage to a muscle or tendon, ask the patient to move a part of his body distal to the injury.

### *Loss of Sensation Distal to a Wound or Bite*

As muscles and tendons control movement, nerves control sensations. A damaged nerve will affect sensations distal to the injury.



*Jagged cuts, clean cuts, or punctures*

The shape of a wound can give you an idea of what possible internal damage to suspect. Wounds are generally one of three shapes: jagged, clean, or punctures. Jagged wounds are a sign of damage by a blunt object. Tissues and organs may be damaged. Clean wounds are a sign of damage by a sharp object. Veins, arteries, nerves, muscles, or tendons may be cut. Puncture wounds are a sign of damage by a thin, pointed object such as a nail. Organs deep inside the body may be affected.

*Deformity of a Limb or Joint*

Something that is not in its normal shape is deformed. Some strong force such as a fall can deform a limb. Suspect a broken bone or dislocated joint when you see a person whose arm or leg is bent at an unnatural angle.

*Black-and-Blue Skin*

A black-and-blue mark is always a sign of bleeding beneath the skin in the affected area. Suspect damage to tissue.

*Reddened Skin*

First degree burns, such as sunburn, redden the skin.

*Oozing Blisters*

Second degree burns will blister the skin. Fluid will leak, or ooze, from the burn. A person who suffers a large second degree burn will lose a lot of body fluid. His burn will be very painful. He may go into shock.

*White or Charred Skin*

Third degree burns destroy the whole thickness of the skin, exposing fat, and leaving white edges. Suspect damage to underlying tissues in the affected area and dehydration from loss of body fluids.

*Loss of Vision*

A sudden loss of vision occurs when some traumatic injury as one

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from an explosion or laceration affects the eyes. A gradual loss of vision from traumatic injury occurs when bleeding builds up inside the eye.

### *Abnormal Reaction of Pupils to Light*

Pupils normally dilate in low light and constrict in bright light. Any change in this normal reaction may be a sign of damage to the eye, its muscles, or its nerves. One pupil may not react in the same way or to the same degree as the other. Or both pupils may not react in a normal way to light, either remaining constricted in low light or widely dilated in bright light.

### *Decreased Consciousness*

A person loses all or part of his consciousness when some trauma directly or indirectly affects his brain. Almost every trauma affects consciousness in some way. The person may only feel anxious. He may be stunned or he may go into a deep coma. Decreased consciousness is a serious sign when some trauma has occurred.

### *Depression in the Skull*

Suspect brain damage when you find a depression or soft spot in a person's skull.

### *Watery Discharge or Blood from the Nose or Ears*

Suspect severe brain damage when you see a watery discharge or blood from the nose or ears, except in simple nosebleeds.

### *Paralysis of Arms or Legs*

Suspect damage to a person's neck and spinal column when you see that he cannot move his arms or legs.

### *Absent or Decreased Breath Sounds*

Suspect an injury to the lungs when you hear decreased breath sounds or do not detect any breath sounds on auscultation. His lungs may be punctured, perhaps by a rib or by a foreign object. His lungs may also contain blood.



*Frothy Bubbles from a Chest Wound*

Frothy bubbles from a chest wound are a clear sign that a lung has been punctured and air is escaping through the wound. This is also called a sucking chest wound. The person will probably cough up blood.

*Collapse of the Chest on Breathing In and Expansion of the Chest on Breathing Out*

Broken ribs will cause a person's chest to collapse when he breathes in and expand when he breathes out. The condition occurs after an accident in which a person is thrown against another object. He will have trouble breathing. Check for cyanosis. The person may also have damaged his heart or lungs.

*Rebound Tenderness*

Rebound tenderness, a sign of peritonitis, occurs when you gently push on the abdomen, then suddenly release the pressure, causing severe pain. Trauma to the abdomen can cause the abdominal organs to bend or to leak gastric or intestinal fluids inflaming the peritoneum.

*Muscle Guarding*

Muscle guarding is a tightening of the abdominal muscles against pressure. The person tightens his abdominal muscles because he feels pain. Muscle guarding is usually caused by an abdominal infection, but trauma can also cause it. Damage to abdominal organs and internal bleeding can cause muscle guarding.

*Absence of Bowel Sounds*

When you do not hear bowel sounds from a person's abdomen, suspect an internal injury.

## 4.2 TAKING THE MEDICAL HISTORY OF A PATIENT WHO HAS SUFFERED TRAUMA

Treat a patient for any life-threatening emergency and for shock before you complete a medical history of his problem. Some traumatic injuries, however, will not be obvious. You may have to question the patient or a witness to the accident to diagnose the problem. You may also have to ask questions to determine the extent of the injuries. The questions in this section will help you diagnose a traumatic injury and determine the possible extent of the trauma.

Your first question in the event of a traumatic injury should be to determine how and when the injury occurred. Ask this question whenever you see a patient who has suffered trauma.

### *“How and When Did the Injury Occur?”*

You will have to know how an injury occurred to begin looking for the extent of the damage it has caused. The patient's condition may seem worse than you would expect. This may be because a person's condition will worsen with time if he is not treated. You will have to know whether his condition is worsening because of the injury or because of related problems such as shock and loss of body fluids.

Ask these questions when the person has suffered bleeding, bites, or lacerations.

### *“How Long Were You Bleeding? How Much Blood Did You Lose?”*

A serious wound may have stopped bleeding before you see the patient. Ask him or a witness to the accident how long the bleeding continued and how much blood was lost. You will have to start an IV immediately if the patient was bleeding for half an hour or more or if he lost more than two cups of blood.

### *“How Long Ago Were You Bitten?”*

The treatment for an animal bite and the repair of the wound will depend on how much time has passed since the bite.



*“Did the Animal Bite Anyone Else?”*

Suspect rabies in any bite by an animal that has bitten more than one person.

*“Can You Feel Anything on the Skin Beyond the Wound?”*

Loss of feeling distal to a wound is a sign of nerve damage.

Ask these questions when the person has suffered a fracture, a sprain, a dislocation, or a burn.

*“Did You Hear a Snapping Sound When You Received Your Injury?”*

Swelling, bleeding, and tenderness may cover signs of trauma to a bone. A snapping sound, however, is a clear sign that a bone has broken. Ask your patient if he heard a bone snap when you suspect a fracture.

*“Did You Twist the Affected Limb?”*

Suspect a sprain or a dislocation if a person has injured a joint by twisting it.

*“Can You Move the Limb at Its Joint?”*

Suspect a sprain or a dislocation if a person cannot move a limb, or cannot move it in its normal way. Damage to a nerve can also affect the movement of a limb.

*“Does the Whole Area of Your Burn Hurt?”*

Pain from a burn is a sign that nerve endings have not been destroyed. A painful burn area is a first or second degree burn. A burn area that is not painful is a sign of a third degree burn.

*“Do You Feel Restless? Are You Thirsty?”*

These signs of shock occur in severe cases of burn. The burn releases a great amount of fluids from the body. Your treatment for shock will have to include rehydration.

Ask these questions when the person has suffered any trauma to his eye, head, neck, spinal column, chest, or abdomen.

*“Did You Lose Your Vision Suddenly or Gradually?”*

Sudden loss of vision is a sign of severe damage to the retina and possible bleeding into the eyeball.

Gradual loss of vision may be a sign of slow bleeding into the eye. Swelling of the cornea can also cause clouding of vision and gradual loss of vision. Infection of the eyeball following trauma can cause gradual loss of vision.

*“Does Your Head Ache?”*

Suspect trauma to the head if a person says his head aches. A headache that is growing worse may be a sign of bleeding into the brain or increasing pressure on the brain. A concussion causes a headache that grows less severe with time.

*“Are You Dizzy?”*

Suspect trauma to the head when a patient says he feels dizzy. Dizziness means the inner ear, which controls balance, is affected.

*“Were You Unconscious after the Injury?”*

Any trauma to the head may make a person lose consciousness. Do not assume, however, that a person who has regained consciousness is well. Pressure may be building on his brain. Observe for at least two days any patient who has been knocked unconscious.

*“Do Your Arms or Legs Feel Weak?”*

Trauma to the head can cause bleeding into the brain. The patient will feel weak. He may have trouble moving his arms or legs or one side of his body. People who suffer severe strokes may also feel this weakness.

*“Are You Having Trouble Speaking?”*

A person who has suffered an injury to his head may have trouble speaking. Suspect a head injury when a person in an accident slurs his words or speaks unclearly. Drugs, alcohol, and poisons also affect the brain and may cause trouble speaking.



*“Does Any Part of Your Neck or Backbone Hurt?”*

An injury to a person's spinal column, his backbone, will cause severe pain at the site of the trauma. The person will be afraid to move. Do not move a person who suspects that his neck or spinal column is hurt.

*“Can You Move Your Arms and Legs?”*

Suspect damage to the neck or spinal column if a person cannot move his arms or legs. Such an injury may also paralyze the person's chest muscles and affect his breathing.

*“Is Any Part of Your Body Numb?”*

Loss of feeling in any part of the body is a sign of damage to the nervous system. The damage to the nerves may occur at the neck, spinal column, or site of an injury. A general loss of feeling is a clear sign of damage to the spinal column.

*“Are You Having Trouble Breathing?”*

You may not suspect trauma to the chest when you first see a person who has suffered many injuries in an accident. However, trauma to the chest can damage the lung tissue, collapse the lungs, fill the lungs with blood, or affect breathing in other ways.

*“Does Coughing Hurt You?”*

Coughing, or deep breathing, moves the chest. Pain which occurs when the chest moves is a sign of trauma to the wall of the chest, the pleura, or the abdomen.

*“Have You Coughed Up Blood?”*

You can tell whether a chest injury has affected a person's lungs by finding out whether he coughs up blood. Bleeding into the lungs is a sign of a severe trauma. The person will not only lose a lot of blood, but the blood may fill his lungs and trouble his breathing.

*“Does Your Abdomen Hurt?”*

A person who suffers some trauma to his abdomen will first feel the pain in the area of the injury. Find out the exact location of the

pain as soon as possible. Knowing the source of the pain will give you an idea of which organs might have been damaged. Note the source of the pain because in time it will spread, and the patient will no longer be able to give you an exact location.

*“Have You Seen Blood in Your Urine? Is Your Urine Dark or Brown?”*

Blood in a person's urine is a sign of damage to his kidney, bladder, or urethra.

#### 4.3 EXAMINING A PATIENT WHO HAS SUFFERED TRAUMA

Immediate care for life-threatening problems always comes before any examination. The first part of your physical examination, therefore, will be to identify life-threatening emergencies and to check the stability of the patient's vital signs.

The second part of the examination locates any other problem the patient may have. This part of the examination proceeds only if the patient is breathing by himself and if any severe bleeding is controlled.

##### *Check for Any Paralysis or Loss of Sensation*

Suspect an injury to the spinal column if a person cannot move his arms or legs. A low spinal injury will affect only the legs. A neck injury, however, will affect both arms and legs. You may ask the patient to move his arms and legs, but you should never move them for him.

A general loss of sensation is another sign of damage to the spinal column. Paralysis limited to one side of the body is a sign of stroke or a head injury with brain damage.

##### *Note the Patient's Reaction to Pain*

Ask the patient where he feels pain. Note the place he tells you, for pain is a clear sign of which parts of the body were immediately affected.



General pain is a sign of trauma, but it is a good sign that the spinal column has not been damaged. A local pain is a sign of a specific injury, such as a broken bone.

Lack of any pain with obvious injuries is a sign of damage to the spinal column, severe shock, or drunkenness.

Begin a head-to-foot examination once you have noted any paralysis, loss of sensation, and reaction to pain.

### *Check the Scalp for Lacerations*

Look for blood in the patient's hair. Decide how much blood was lost. Do not move the patient's head until you are sure his neck was not injured.

### *Check the Skull for Depressions*

Gently feel the skull for depressions. You may feel a piece of skull bone sticking out. A depressed skull bone can damage the brain. Do not move the head until you are sure there is no injury to the neck.

### *Check the Ears and Nose for Blood and Clear Fluid*

Check the ears and nose for blood and clear fluid. These are signs of a fracture of the base of the skull and damage to the brain. Blood is usually a sign of damage to the brain. Clear, watery fluid is a sign that the meninges are damaged. Blood from the nose with no clear fluid may only be a sign of a local injury to the nose.

### *Check the Neck for Fractures*

Look and gently feel for any deformity or lumps in the neck. Do not continue with the check if the head is in an abnormal position. Steady the neck with rolled towels, sand bags, or a cervical collar. Advise the patient not to move his neck even slightly.

### *Check the Chest for Movement on Both Sides*

Note how the patient's chest rises and falls. Look for any signs of damage to his lungs or ribs. One side of his chest, for example, may not rise with the other. Or the chest may fall when he breathes in and rise when he breathes out.

*Feel for Fractures of the Ribs and Chest Wounds*

Gently feel the chest for broken ribs. You may feel depressions where the ribs are broken. You may also feel a broken rib grate when its ends rub against each other. Also look for frothy bubbles from a chest wound when the patient breathes out.

*Check the Abdomen for Spasms and Tenderness*

Gently press the abdomen. Severe muscle guarding is a sign of internal bleeding or damage to the stomach or intestines. A damaged kidney will cause tenderness in the flank or loin.

*Check the Pelvic Area for Fractures*

Gently feel the pelvic bones for lumps, depressions, or areas of tenderness. You may feel the ends of broken bones grating against each other. Look for any abnormal position of the leg caused by a broken hip.

*Assess the Degree of a Burn*

The degree of a burn depends on the depth of its damage. A first degree burn affects only the first layer of skin. The skin turns red and painful. Sunburn is a first degree burn.

A second degree burn affects the first and second layers of skin. The skin blisters and fluid leaks from the burn. The burn is very painful. Scalding and high heat cause second degree burns.

A third degree burn damages all the layers of skin and the tissue beneath them. Tissues are pale white or charred black. Fluid leaks from them. Nerve endings are burned, so the person feels no pain. Healing occurs only from the edges of the wound.



### Assessing the Degree of a Burn

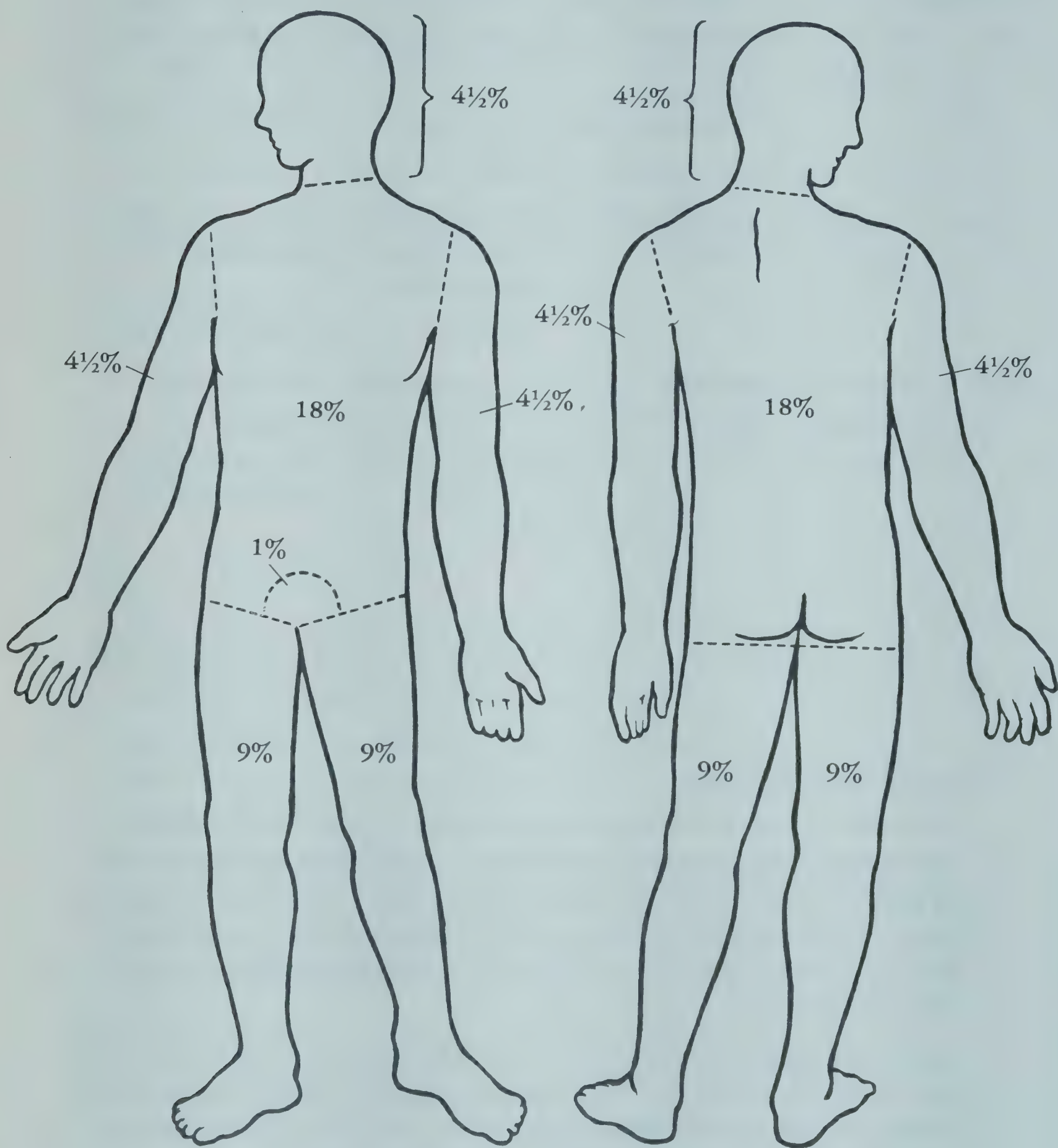
DEGREE OF BURN	TYPE OF BURN	SYMPTOMS	APPEARANCE	COARSE
First	Sunburn Low heat	Increased sensitivity of skin soothed by cooling	Reddened skin turns white with pressure Little or no edema	Complete recovery within a week Peeling
Second	Scalding High heat	Very painful to touch	Blistered, red base, broken epidermis, oozing surface Edema	Recovery in two to three weeks Some scarring and loss of skin color
Third	Fire Hot metal	Painless Shock	Dry, pale white or charred Broken skin with fat exposed Edema	Skin peels off Scarring Loss of contour and function

### *Assess the Extent of a Burn*

The severity of a burn depends on the amount of body surface damaged. Burns damage blood vessels in the skin. Large amounts of water leak out of the blood vessels and into the tissue under the burn. A person with burns on a large part of his body may lose a large amount of fluid. He will quickly develop shock unless the water is replaced.

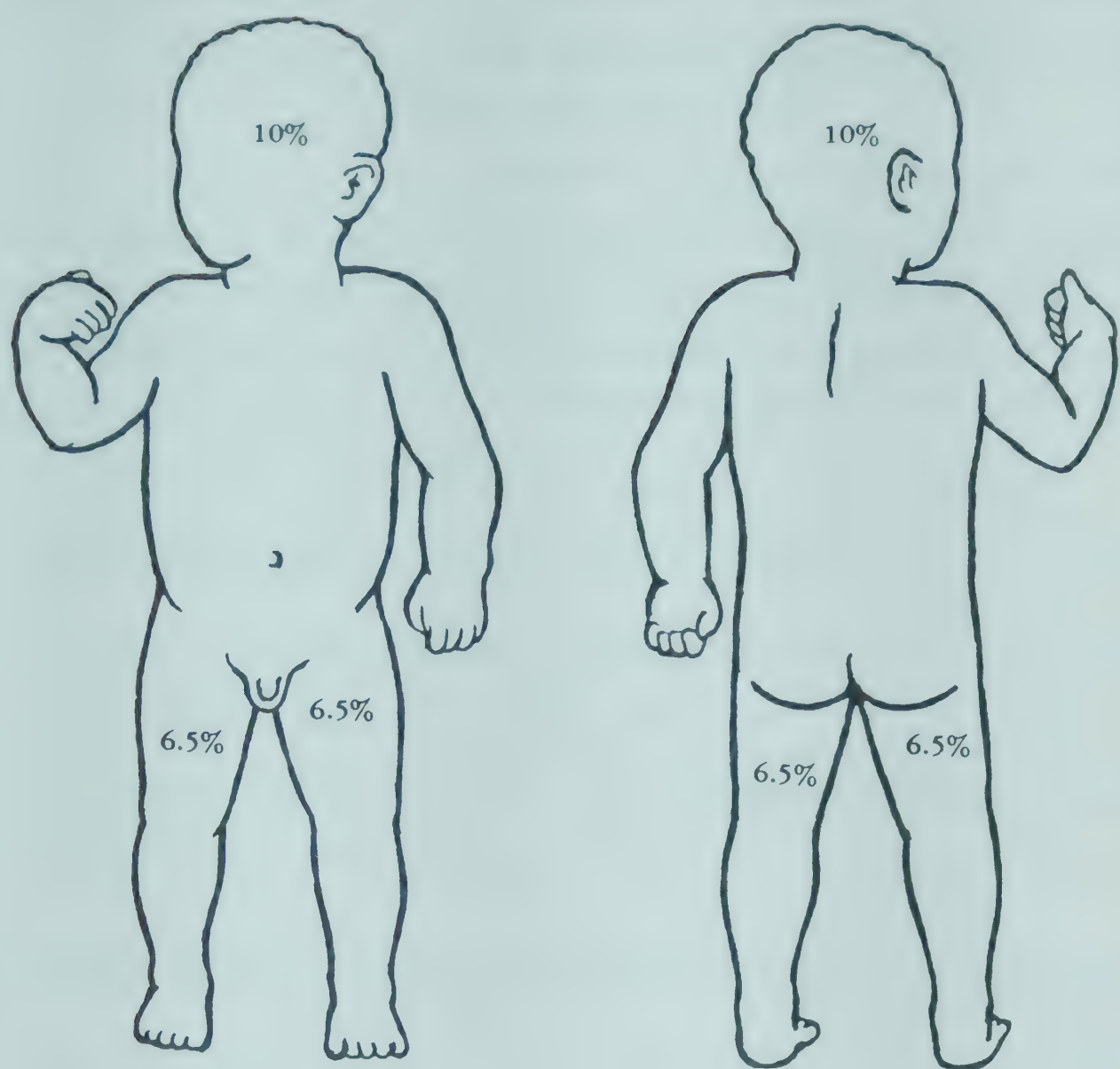
You must assess the extent of burns to decide whether to refer the patient to a hospital or treat him at the health center. Refer adults with burns on more than ten percent of their body and children with burns on more than five percent of their body.

Use the rule of nines to assess the extent of a person's burns. The rule of nines divides the body into sections. Each section represents about nine percent of the body's surface.



The rule of nines assigns a larger percentage of body area to a child's head than to an adult's head. A child's head is assigned twenty percent of body area. A child's legs are assigned less body area than an adult's legs. A child's legs are assigned only thirteen percent of the body area.





### Rule of Nines for Children

AGE	TWO YEARS AND YOUNGER	THREE TO SEVEN YEARS	EIGHT TO TWELVE YEARS	OLDER THAN TWELVE YEARS
Percent of body area assigned to head and neck:	20% (Front = 10%)	16% (Front = 8%)	11% (Front = 5.5%)	9% (Front = 4.5%)
Percent of body area assigned to each leg:	13% (Front = 6.5%)	15% (Front = 7.5%)	18% (Front = 9%)	18% (Front = 9%)

#### *Examine the Site of a Bite*

Animal and human bites may lacerate the skin and underlying tissue. Check for any damage to nerves or tendons.

#### *Check the Arms and Legs for Fractures*

Look for any swelling or discoloration on the patient's arms and legs. Feel for any lumps or tenderness. Note any abnormal position

or deformity of his limbs. Swelling, lumps, discoloration, and deformities are signs of fractures.

*Check the Buttocks for Fractures or Wounds*

Before moving a patient to look for fractures or wounds, make sure he has not suffered any spinal injury. Roll the patient over if his spinal column is not damaged. Feel for any bony lumps in his buttocks. Look for any lacerations.



## REVIEW QUESTIONS

### Assessing a Patient Who Has Suffered Trauma

1. TRUE (T) or FALSE (F)
  - \_\_\_\_\_ A cut major artery can lead to death in a few minutes.
  - \_\_\_\_\_ Blood coming from veins bleeds in spurts.
  - \_\_\_\_\_ Rough, irregular, and blunt objects usually make clean wounds.
  - \_\_\_\_\_ Third degree burns blister the skin.
  - \_\_\_\_\_ You must observe a patient who has suffered a head injury for at least forty-eight hours.
2. Give an example of a first degree burn and describe its effect on the skin.
3. Describe the effect of a third degree burn on the skin. What is a possible complication?
4. Muscle guarding is a sign of trauma to the abdomen. Write two kinds of trauma to the abdomen that would cause muscle guarding.
5. What injury would you suspect in a person who cannot move his legs?

## *Unit 5*

# **Bleeding and Lacerations**

### **STUDENT GUIDE**

#### **OBJECTIVES**

1. Describe the signs and symptoms of bleeding and lacerations.
2. Interview and examine a patient or his relative to diagnose bleeding and lacerations.
3. Treat and care for patients suffering from bleeding and lacerations. Apply a pressure dressing or use a tourniquet to control bleeding. Clean lacerations, give a local anesthetic, and remove dead tissue from a wound. Suture superficial lacerations using a simple, interrupted stitch. Apply a triangular bandage to hold dressings to a shoulder, hip, groin, elbow, knee, hand, foot, or stump.
4. Tell patients and their families how to stop bleeding and how to prevent infection in wounds.

#### **LEARNING ACTIVITIES**

1. Discuss the symptoms and signs of severe bleeding and lacerations.
2. Practice taking a medical history and diagnosing bleeding and lacerations using patient information created by you and your fellow students as the basis for role-play.
3. Discuss your role-play.
4. Practice identifying problems found in case studies and outline the treatment and care procedures for these problems.
5. With your working group, design and deliver patient and family education messages related to bleeding and lacerations.
6. Observe, discuss, and practice procedures for applying a pressure dressing and controlling bleeding using a tourniquet.



7. Observe, discuss, and practice procedures for applying a triangular bandage to a shoulder, hip, groin, elbow, knee, hand, foot, or stump.
8. Observe and discuss procedures for cleaning wounds, giving a local anesthetic, and removing dead tissue from a wound.
9. Observe, discuss, and practice the procedure for suturing a laceration using simple, interrupted stitches.
10. With a small group of students, be on call at a hospital emergency room or health center during the evening to observe how emergency problems are handled.

## 5.1 BLEEDING

Severe bleeding is a life-threatening emergency. A sudden loss of blood or slow but continuous bleeding can lead to shock and to death. The bleeding may not be obvious. Internal bleeding can be as severe as external bleeding. You must therefore learn how to manage all bleeding and to treat patients for shock who have lost a lot of blood.

### CLINICAL PICTURE

#### a. Presenting complaint

The patient will have suffered some trauma, usually in an accident. He will be anxious and may be thirsty. He may feel dizzy and weak. His vision may be blurred.

#### b. Medical history

Find out how the bleeding started. Ask if the wound was deep. Suspect internal bleeding from deep wounds. Ask the patient whether he heard a snapping sound in any limb. Ask about any pain in the abdomen. Suspect internal bleeding if the pain is increasing. Ask about any pain in the chest or blood in sputum that the patient coughs up.

#### c. Physical examination

Note the flow of blood. *Bright red, spurting blood* comes from an artery. *Dark red, oozing blood* comes from a vein.

Examine the patient's chest and abdomen for signs of internal bleeding. Examine the patient for signs of shock.

### COURSE AND COMPLICATIONS

Severe bleeding can cause death in a few minutes. The body cannot adjust to a rapid loss of blood. A patient with internal bleeding may lose a lot of blood before you suspect he is bleeding. Bleeding from



an artery in a limb may lead to loss of that part of the body distal to the bleeding.

## PATIENT CARE

### a. Apply direct pressure

You can stop most bleeding by applying pressure directly to the wound. For life-threatening bleeding, place your fingers or your hand directly over the wound and press firmly down. Do not delay treatment to search for a dressing, but if a dressing is immediately available, use it.

Continue to apply pressure on the wound with a tight dressing. Use gauze pads and an elastic bandage if they are available. See Patient Care Procedures.

Cover the wound with a clean cloth if you do not have gauze pads. Press the cloth firmly onto the wound and hold it there or tie it in place with other material.

Do not remove the dressings until you are at a hospital or health center where you can clean and close the wounds. Removing the dressing will open the wound again. Instead of removing blood-soaked dressings, add fresh dressings on top of the old.

### b. Use a tourniquet in extreme cases

You may not always be able to stop bleeding with direct pressure. You will have to use a tourniquet around an arm or leg in cases of extreme bleeding. Extreme bleeding occurs when an artery is cut, when you cannot control bleeding by applying direct pressure, or when a part of an arm or leg is cut off.

Tourniquets injure soft tissue. They can kill tissue beyond a wound and cause the patient to lose an arm or leg. For these reasons, tourniquets are dangerous and should not be used except in severe cases.

To apply a tourniquet, fold a triangular bandage lengthwise to six or eight folds thick. Tie the bandage around the limb above the wound. Twist the bandage with a stick, tightening it until the bleeding stops. See Patient Care Procedures.

### c. Treat for shock

Treat any patient who has lost more than two cups of blood for shock. Start an IV as soon as you have controlled the bleeding.

Also treat any patient you suspect may have internal bleeding for shock. Do not wait until you see signs of shock. Start the IV when the patient still has good blood pressure. His blood pressure will fall once he goes into shock. Use a normal saline solution for the IV. See Patient Care Procedures and Patient Care Guides.

## 5.2 LACERATIONS

Lacerations include cuts, punctures, scrapes, and all other tears of the skin and underlying tissue. The laceration may be a clean wound, a jagged wound, or a puncture. A clean wound, such as one made by the edge of a knife or a razor, is usually longer than it is deep. A jagged wound, such as one made by broken glass or twisted metal, will be rough and irregular. A puncture wound, such as one made by the point of a knife or an animal bite, is usually deeper than it is wide.

Lacerations are dangerous because they can affect the use of a person's limbs and lead to severe infections. Deep lacerations may cut nerves, tendons, muscles, major arteries, and even bone. Deep lacerations may also cause internal bleeding. Untreated lacerations or lacerations made by rusty or unclean objects can become infected. Bites often become infected because bacteria is introduced into the wound by teeth.

### CLINICAL PICTURE

#### a. Presenting complaint

A person presenting with a laceration will usually say he has a deep wound, an infected wound, or a wound from an animal bite. He may complain of loss of sensation or movement.



b. Medical history

Find out what caused the laceration, when it occurred, and how much blood was lost.

You need to know what caused the laceration to judge the risk of possible infection. For example, a puncture wound made by a rusty nail will probably leave foreign matter buried deep inside the tissue. A bite will leave bacteria inside the wound.

Ask the patient when he received the laceration. Wounds more than twelve hours old are more likely to become infected than fresh wounds.

Ask the patient how long he was bleeding and how much blood he lost. You must be aware of any risk of shock so you can begin treatment for it before the first signs appear.

c. Physical examination

Examine the patient first for signs of heavy bleeding. Suspect *internal bleeding* in *deep cuts* and *punctures* of the *chest, abdomen, and groin*.

Look for signs of shock. Most people who present with a severe laceration will appear anxious, nervous, or restless. Check the patient's skin color, temperature, pulse, and blood pressure for signs of deepening shock.

Locate the laceration. Note whether it is a deep wound or possibly an infected wound. Check *deep wounds* for *nerve damage* by pinching or pricking skin distal to the wound. Check *damage* to *muscles* or *tendons* by asking the patient to move the part of his limb distal to the wound. Examine lacerations of the chest and abdomen for possible damage to internal organs.

Examine the wound for any sign of a foreign body or possible infection.

## COURSE AND COMPLICATIONS

Deep lacerations can involve a person's nerves, muscles, and tendons. The patient may lose feeling in the injured limb. He may lose his ability to move the limb.

Infections can be the most serious complications of a laceration. Deep infections can spread to the bone. Infections can kill tissue. Lacerations can become infected with tetanus and lead to death. Bites can also infect the patient with rabies virus.

## PATIENT CARE

- a. Stop the bleeding and treat for shock

Stop the bleeding and treat the patient for shock. The urgency of these steps depends on the amount of damage caused by the laceration. You may only need to apply direct pressure to a small wound and reassure the patient. However, you may also have to apply a tourniquet and start an IV if the amount of damage and bleeding is great.

- b. Refer patients with severe lacerations

Assess the patient's general condition, and the size and condition of his laceration. You may decide the laceration will require a doctor's care because of its size or the risk of infection. You should always refer patients with severe lacerations in which nerves, muscles, tendons, or major arteries are damaged. Also refer any patient with an animal bite if you suspect rabies or if the bite is on the face or neck. See Patient Care Guides.

Leave old dressings on severe lacerations if the pressure has already stopped the bleeding. The bleeding may start again if you remove the dressings. Simply transfer the patient to a hospital.

Do not attempt to suture:

A laceration that involves damage to nerves, tendons, muscles, or major arteries

A laceration that is more than twelve hours old

A laceration with reddened edges, discharge, or other signs of infection

A bite of any kind

- c. Clean the laceration

Clean the laceration. Scrub dirty wounds with soapy water. Wash the wound for fifteen minutes with water that has been boiled and cooled again. Add a pinch of salt to the water. Dress and bandage the wound. See Patient Care Guides.

- d. Remove dead tissue

Remove dead tissue from a laceration after you have cleaned it. Dead tissue does not contract when you touch it. It will look pale and bloodless. See Patient Care Procedures.

- e. Suture a superficial laceration and a laceration on a joint



Suture superficial lacerations that are more than 1 cm long and lacerations on joints. Lacerations on joints will pull apart unless they are sutured.

Tell the patient with a sutured laceration to keep the bandage dry and to return in ten days to have the stitches removed. He should return immediately if pain or any other sign of infection develops. You must remove stitches from wounds with signs of infection. See Patient Care Procedures and Patient Care Guides.

f. Close a small laceration

Hold the edges of an unsutured laceration together with adhesive tape. Cover the laceration with dry and sterile gauze. Use a clean cloth that has been washed and ironed dry if sterile gauze is not available. Bandage the wound. See Patient Care Procedures.

g. Give penicillin to a patient with an old laceration

Give penicillin to a patient whose laceration is more than twelve hours old. The risk of infection in old wounds is high. If the patient is allergic to penicillin, give him erythromycin. See Patient Care Guides.

Teach a patient with an infected laceration how to apply warm, salt soaks. He should apply the soaks four times a day until the laceration has a dry, clean crust and until no redness remains around its edges.

h. Give ampicillin for human bites

Human bites often become infected. Give a patient with a human bite an oral antibiotic such as ampicillin every six hours for five days. See Patient Care Guides.

i. Treat for tetanus

Protect the patient against tetanus. Give him tetanus toxoid if he has had tetanus shots before. Begin a series of tetanus shots if he has not been immunized before. See Patient Care Guides.

Refer the patient to a hospital if his laceration is a puncture, a very large laceration or if the laceration is infected and the patient has not had a tetanus immunization before.

## PREVENTION

Accidents which cause lacerations occur at home, at work, and at

play. Conduct safety programs to help people become aware of dangers present in these places.

First aid will prevent many lacerations from becoming infected and prevent the loss of a large amount of blood. Teach parents, employers, and teachers first aid techniques. Also urge people to keep first aid kits at home, in the school, and at the workplace.

Teach members of the community how to care for wounds to prevent infection. Urge parents to bring their children to the clinic for tetanus immunizations. Tell people the benefits of a tetanus shot in preventing infection of wounds.



## REVIEW QUESTIONS

### **Bleeding and Lacerations**

1. TRUE (T) or FALSE (F)

- \_\_\_\_\_ Bleeding from a large blood vessel must be stopped before giving treatment for shock.
- \_\_\_\_\_ Bleeding from a small blood vessel must be stopped before giving mouth-to-mouth respiration.
- \_\_\_\_\_ Internal bleeding is usually caused by a sharp object.
- \_\_\_\_\_ Spurting, bright red blood usually occurs when a vein is injured.
- \_\_\_\_\_ Fracture of the femur bone can lead to internal bleeding severe enough to cause shock.

2. List three signs of internal abdominal bleeding.

3. List three ways to control bleeding.

4. Under what conditions would you apply a tourniquet?

5. List three problems that could result from using a tourniquet.

6. How would you apply a pressure dressing?

7. Match the problems in the first column with the proper procedure in the second column.

- |   |   |
|---|---|
| _____ You cannot feel a pulse distal to the laceration  | A. Do not close the wound                   |
| _____ The patient presents with a wound more than twelve hours old  | B. Close the wound with a butterfly bandage |
| _____ The patient presents with a 3 cm laceration on his knee   | C. Close the wound with a suture            |
| _____ The patient presents with a 2 cm laceration from a dog bite   | D. Refer the patient to a hospital          |
| _____ The patient presents with a 1 cm clean laceration on his face   |   |
| _____ A child presents with a 2 cm laceration that is eighteen hours old and soiled with oil, gravel, and dirt  |   |
| _____ A patient who fell from his bicycle has a 3 cm laceration on his leg. He complains of pain and tenderness in his abdomen. He has a rapid and weak pulse with falling blood pressure |   |

8. List four situations in which you would not close a wound.

9. A five-year-old child cut himself with a sharp knife. The laceration is 1 cm long. The bleeding is controlled. The child cannot move the middle finger of his hand. You note slight swelling with tenderness. The child does not feel a pin prick on his finger. The laceration is eighteen hours old. How will you care for the child?



- a. Wound care
- b. Tetanus prevention
- c. Antibiotics
- d. Referral

## REVIEW EXERCISE

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### *Case Study 87*

---

Name of Patient: Sule, Ibrahim

Sex: Male

Date of Birth: 13 June 1950

Date of Visit: 12 July 1979

Vital Signs:      Temperature      37° C  
                         Pulse                      110  
                         Respirations      25  
                         Blood pressure      100/70  
                         Weight                      70 kg

Presenting Complaint and Medical History: The patient was chopping meat when he cut himself with a knife on his left wrist. The injury is painful. The patient feels anxious and thirsty. He lost a lot of blood. He feels dizzy and wants to lie down.

Physical Examination: The young man looks anxious. He is pale and has cold, clammy skin. His breathing is rapid and shallow. The cut is clean. The blood is bright red and comes out in spurts.

Study the information given above, then answer these questions.

1. What is the diagnosis?
2. What information in the case study was most helpful to you when you made your diagnosis?
3. Was any information missing from the case study that would have helped you make the diagnosis?
4. How would you treat this patient?
5. What advice would you give this patient?



## REVIEW EXERCISE

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### Case Study 88

---

Name of Patient: Abigwe, Jonathan  
Sex: Male  
Date of Birth: 15 May 1950  
Date of Visit: 13 December 1979

Vital Signs:      Temperature      37° C  
                         Pulse                      80  
                         Respirations      76  
                         Blood pressure   126/80  
                         Weight                72 kg

Presenting Complaint and Medical History: The patient was in a motorcycle accident. The motorcycle skidded and fell on his leg. He injured the outside of his right knee. He is in pain. The outer part of his leg and foot is numb. He cannot move the foot outward. His right arm and shoulder hurt. He has not received any tetanus immunization.

Physical Examination: The man has wounds on his right leg and forearm. The wound on his right leg is just below the knee. The wound is 4 cm by 4 cm. It has jagged edges and dirt inside. Blood oozes out. The patient has no feeling on the outer part of his right leg and foot. His ankle movement is limited. He cannot bend his foot upward. The wound on his right arm is 2 cm by 3 cm. It has jagged edges. Blood oozes out. His heart sounds are normal. His chest is clear. His abdomen is flat and tender.

Study the information given above, then answer these questions.

1. What is the diagnosis?
2. What information in the case study was most helpful to you when you made your diagnosis?

3. Was any information missing from the case study that would have helped you make the diagnosis?
4. How would you treat this patient?
5. What advice would you give this patient?



SKILL CHECKLIST

Applying a Pressure Dressing

This checklist has two purposes:

- 1) Students should use it as a guide for checking their skills or other students' skills.
- 2) Supervisors should use it when they evaluate how well students can apply a pressure dressing.

After observing a student, enter a rating in the appropriate column.

Rating: 1 = Inadequate  
2 = Needs improvement  
3 = Satisfactory  
4 = Above average  
5 = Excellent

When applying a pressure dressing:

YES NO RATING COMMENTS

1. Collect equipment and materials				
2. Wash your hands with soap and water				
3. Tell the patient what you are going to do				
4. Lay the patient down				
5. Control bleeding by applying direct pressure with your fingers or hand				
6. Gradually remove your fingers from the wound. Tightly pack the wound with gauze pads				
7. Continue to pack the laceration until the dressings are higher than the surface of the skin				

	YES	NO	RATING	COMMENTS
8. Place several layers of sterile dressings on top of the laceration while applying pressure with your hand				
9. Hold the dressing down with adhesive tape				
10. Firmly wrap the laceration with a bandage, starting from the top of the wound and covering the entire area				
11. Check the laceration every fifteen minutes				
12. Apply more pressure if the dressing is soaked through				
13. Frequently check the pulse distal to the dressing				
14. Check the temperature and color of the skin distal to the wound				
15. If the pulse is absent or the skin is blue and cold, loosen the bandage				
16. If the patient has lost two cups of blood, begin an intravenous infusion of normal saline				



# SKILL CHECKLIST

## Using a Tourniquet to Control Bleeding

This checklist has two purposes:

- 1) Students should use it as a guide for checking their skills or other students' skills.
- 2) Supervisors should use it when they evaluate how well students use a tourniquet to control bleeding.

After observing a student, enter a rating in the appropriate column.

Rating: 1 = Inadequate  
 2 = Needs improvement  
 3 = Satisfactory  
 4 = Above average  
 5 = Excellent

When using a tourniquet  
to control bleeding:

YES NO RATING COMMENTS

1. Fold a triangular bandage so that it is three to four inches wide and six to eight folds thick				
2. Wrap the bandage twice around the arm or leg just above the bleeding point but avoid wrapping it just below the knee or the elbow				
3. Tie one over-hand knot in the bandage				
4. Place a stick over the knot and tie a square knot over the stick				
5. Use the stick as a handle and twist it to tighten the bandage until the bleeding has stopped				
6. Do not make the bandage any tighter than necessary to control the bleeding				

	YES	NO	RATING	COMMENTS
7. Secure the stick in place with gauze or adhesive tape				
8. Do not cover the tourniquet				
9. Write the time of the application of the tourniquet on a tag and attach it to the patient				
10. Tell the hospital staff about the tourniquet and the time it was applied				



SKILL CHECKLIST

Cleaning Lacerations

This checklist has two purposes:

- 1) Students should use it as a guide for checking their skills or other students’ skills.
- 2) Supervisors should use it when they evaluate how well students can clean wounds.

After observing a student, enter a rating in the appropriate column.

Rating: 1 = Inadequate  
2 = Needs improvement  
3 = Satisfactory  
4 = Above average  
5 = Excellent

When cleaning lacerations,  
you should:

YES NO RATING COMMENTS

1. Collect equipment and materials				
2. Wash your hands with soap and water				
3. Tell the patient what you are going to do				
4. Check any damage to nerves, tendons, or arteries				
5. Clean the area around the wound if it is deep or very dirty				
6. Inject a local anesthetic				
7. Use thumb forceps to hold the edges of the wound				
8. Soak the gauze in soapy water or antiseptic and scrub the wound with it until all the dirt is cleaned out				

	YES	NO	RATING	COMMENTS
9. Use a syringe to irrigate all corners of the wound				
10. Inspect the wound for any tendon, muscle, or nerve damage				
11. Dress the wound and refer the patient to a hospital if you find nerve, tendon, or muscle damage. Use dry, sterile gauze to dress the wound. Use a clean cloth that you have washed and ironed dry if sterile gauze is not available. Bandage the wound				
12. Close the wound or dress and bandage it if you find no nerve, tendon, or muscle damage				
13. Advise the patient about caring for the wound and taking a tetanus toxoid injection				



# SKILL CHECKLIST

## Giving a Local Anesthetic

This checklist has two purposes:

- 1) Students should use it as a guide for checking their skills or other students' skills.
- 2) Supervisors should use it when they evaluate how well students give a local anesthetic.

After observing a student, enter a rating in the appropriate column.

Rating: 1 = Inadequate  
 2 = Needs improvement  
 3 = Satisfactory  
 4 = Above average  
 5 = Excellent

When giving a local anesthetic, you should:

YES NO RATING COMMENTS

1. Collect equipment and materials				
2. Wash your hands with soap and water				
3. Tell the patient what you are going to do				
4. Carefully clean the skin with an antiseptic				
5. Fill a sterile syringe with anesthetic without contaminating the antiseptic vial or needle. Use a new needle if you need to draw more anesthetic				
6. Insert the needle into the skin around the edges of the wound				
7. Draw back on the plunger to check for blood. Change the position of the needle if you see blood. Check for blood again				

	YES	NO	RATING	COMMENTS
8. With the tip of the needle just below the surface of the skin, slowly inject the anesthetic, moving the needle tip in different directions as you do				
9. Check for numbness before starting to clean and remove dead tissue from the wound				



SKILL CHECKLIST

Removing Dead Tissue from a Wound

This checklist has two purposes:

- 1) Students should use it as a guide for checking their skills or other students' skills.
- 2) Supervisors should use it when they evaluate how well students remove dead tissue from a wound.

After observing a student, enter a rating in the appropriate column.

Rating: 1 = Inadequate  
2 = Needs improvement  
3 = Satisfactory  
4 = Above average  
5 = Excellent

When removing dead tissue from a wound:

	YES	NO	RATING	COMMENTS
1. Collect equipment and materials				
2. Wash your hands with soap and water				
3. Explain to the patient what you are going to do				
4. Clean and anesthetize skin around the wound				
5. Remove small pieces of dead tissue by scrubbing and washing out the wound				
6. Cut away tissue that does not bleed, and tissue that is dark red or very pale. These are signs of dead or damaged tissue				
7. Tie off small, bleeding blood vessels with cat gut suture. Wash out the wound frequently				

YES NO RATING COMMENTS

8. Cut back ragged, dirty wound edges until only healthy skin remains				
9. Leave the wound open, if necessary, and give tetanus toxoid and penicillin				
10. Suture the wound closed if it is less than twelve hours old				
11. Apply a sterile dressing				



# SKILL CHECKLIST

## Suturing Superficial Lacerations Using a Simple, Interrupted Stitch

This checklist has two purposes:

- 1) Students should use it as a guide for checking their skills or other students' skills.
- 2) Supervisors should use it when they evaluate how well students can suture superficial lacerations using a simple, interrupted stitch.

After observing a student, enter a rating in the appropriate column.

Rating: 1 = Inadequate  
 2 = Needs improvement  
 3 = Satisfactory  
 4 = Above average  
 5 = Excellent

When suturing superficial lacerations using a simple, interrupted stitch, you should:

	YES	NO	RATING	COMMENTS
1. Collect equipment and materials				
2. Select the lightest thread that will hold the wound together				
3. Select either a curved needle with a cutting edge or a tapered needle				
4. Wash your hands with soap and water and put on sterile gloves if they are available				
5. Tell the patient what you are going to do				
6. Thoroughly clean the wound				
7. Inject a local anesthetic around the edges of the wound				

YES NO RATING COMMENTS

8. Remove any dead tissue from the wound and smooth its edges				
9. Place the first stitch in the center of the laceration. Run the needle through the skin 1 cm from the edge of the wound, then across the wound and through the other side of the wound, 1 cm from the edge. Pull enough suture material through to tie a knot				
10. Tie the two ends together with a slip knot so the edges of the wound come together without wrinkling or turning white				
11. In the same way, put the next stitch midway between the first stitch and the end of the laceration. Put another stitch on the other side. Put enough stitches 1 cm apart to hold the wound edges together				
12. Adjust the tension of the slip knots so the wound edges just reach together. Tie a square knot over the slip knots to prevent them from slipping				
13. Put a sterile dressing on the wound and bandage it				
14. Explain wound care and follow-up to the patient				
15. Give tetanus toxoid if necessary				



SKILL CHECKLIST

**Applying a Triangular Bandage  
to Hold Dressings to a Shoulder,  
Hip, or Groin**

This checklist has two purposes:

- 1) Students should use it as a guide for checking their skills or other students' skills.
- 2) Supervisors should use it when they evaluate how well students apply a triangular bandage to hold dressings to a shoulder, hip, or groin.

After observing a student, enter a rating in the appropriate column.

Rating: 1 = Inadequate  
2 = Needs improvement  
3 = Satisfactory  
4 = Above average  
5 = Excellent

When applying a triangular bandage to hold dressings to a shoulder:

	YES	NO	RATING	COMMENTS
1. Stand facing the injured shoulder				
2. Place the point of the triangular bandage over the patient's injured shoulder so it points toward his ear				
3. Carry the hem of the bandage around the middle of the upper arm. Cross the ends and tie them on the outer side of the arm				
4. Apply an arm sling on the injured side. Draw the point of the triangular bandage over the sling and secure it				

When applying a triangular bandage to hold dressings to the hip or groin:

YES

NO

RATING

COMMENTS

5. Stand facing the injured hip or groin. Tie a narrow bandage around the waist with the knot on the injured side				
6. Slip the point of a triangular bandage under the knot of the narrow bandage. Carry the hem of the bandage around the middle of the thigh. Cross the ends and tie them on the outer side. Draw the point over the narrow bandage and secure it				



# SKILL CHECKLIST

## Applying a Triangular Bandage to Hold Dressings to an Elbow or Knee

This checklist has two purposes:

- 1) Students should use it as a guide for checking their skills or other students' skills.
- 2) Supervisors should use it when they evaluate how well students can apply a triangular bandage to hold dressings to an elbow or knee.

After observing a student, enter a rating in the appropriate column.

Rating: 1 = Inadequate  
 2 = Needs improvement  
 3 = Satisfactory  
 4 = Above average  
 5 = Excellent

When applying a triangular bandage to hold dressings to an elbow or knee:

	YES	NO	RATING	COMMENTS
1. Lay the point of a triangular bandage on the back of the upper arm or thigh. Lay the middle of the base of the bandage on the back of the forearm or front of the leg				
2. Cross the ends of the bandage in front of the elbow or the back of the knee and then around the arm or thigh. Tie the ends above the joint				
3. Bring the point of the bandage over the knot and secure it with a pin or tape				

# SKILL CHECKLIST

## Applying a Triangualr Bandage to Hold Dressings to a Hand, Foot, or Stump

This checklist has two purposes:

- 1) Students should use it as a guide for checking their own skills or other students' skills.
- 2) Supervisors should use it when they evaluate how well students can apply a triangular bandage to hold dressings to a hand, foot, or stump.

After observing a student, enter a rating in the appropriate column.

Rating: 1 = Inadequate  
2 = Needs improvement  
3 = Satisfactory  
4 = Above average  
5 = Excellent

When applying a triangular bandage to hold dressings to a hand, foot, or stump:

	YES	NO	RATING	COMMENTS
1. Place the bandage under the arm or leg with the point of the bandage away from the patient				
2. Bring the point back on the hand, instep, or stump				
3. Pass the ends of the bandage around the wrist, ankle, or stump				
4. Cross the ends of the bandage, and tie them over the point of the bandage				
5. Draw the point firmly over the knot and secure it				



## *Unit 6*

# **Fractures, Sprains, Dislocations, and Burns**

### STUDENT GUIDE

#### OBJECTIVES

1. Describe the signs and symptoms of:
  - Fractures
  - Sprains
  - Dislocations
  - First degree burns
  - Second degree burns
  - Third degree burns
2. Interview and examine patients to diagnose fractures, sprains, dislocations, and burns.
3. Treat and care for patients suffering from fractures, sprains, dislocations, and burns. Splint a fractured upper arm, forearm, wrist, shoulder blade, collar bone, upper leg, lower leg, kneecap, ankle, or foot. Use a triangular bandage to make an arm sling. Apply a triangular bandage to hold dressings to a shoulder, hip, groin, elbow, knee, hand, foot, or stump. Restore a dislocated shoulder. Bandage a sprained joint.
4. Tell patients and their families how to care for fractures, sprains, dislocations, and burns, and how to prevent burns.

#### LEARNING ACTIVITIES

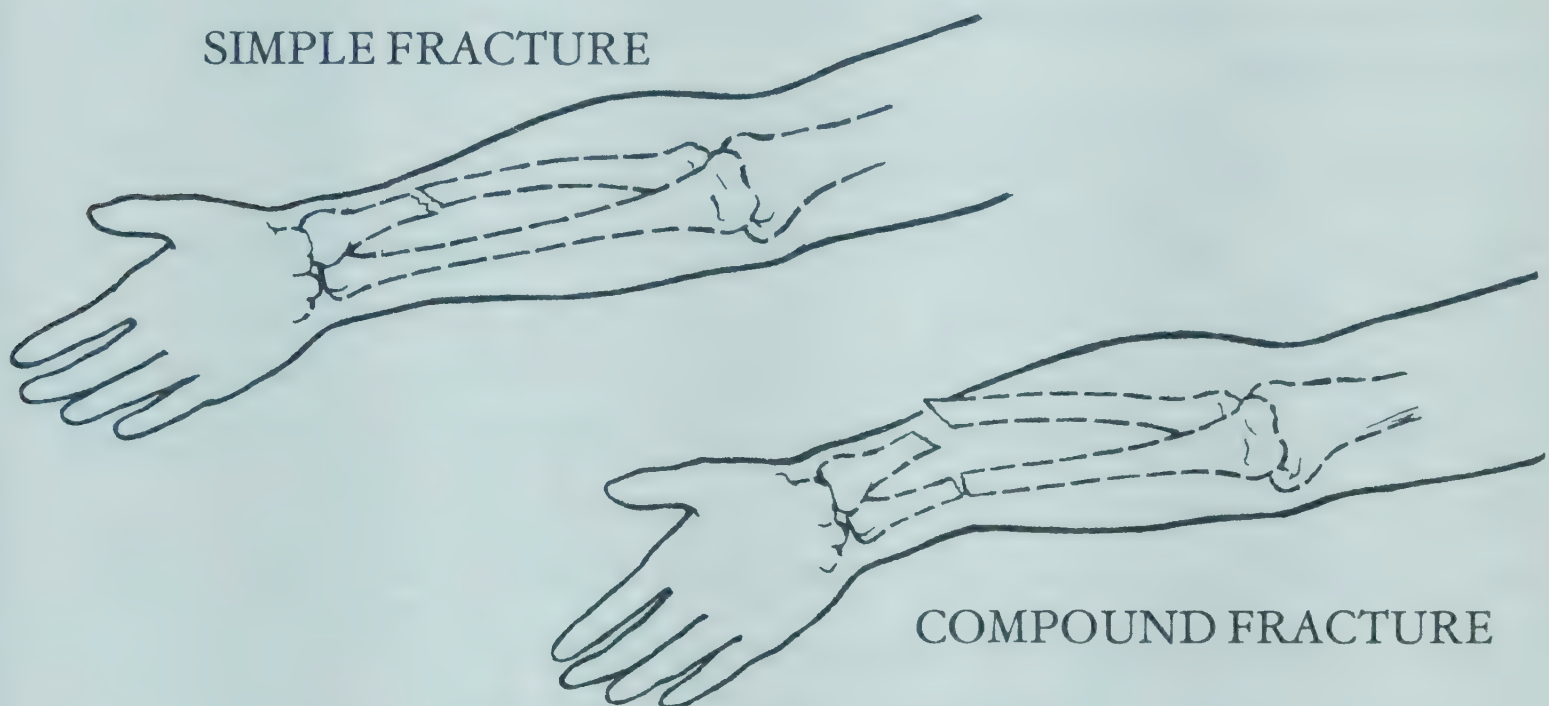
1. Discuss the symptoms and signs of fractures, sprains, and dislocations and of first, second, and third degree burns.
2. Practice taking a medical history and diagnosing fractures, sprains, dislocations, and burns, using patient information created for role-play by you and your fellow students.

3. Take part in a discussion of your role-play.
4. In your working group, identify the emergency condition in a case study given to you by your instructor. Also, outline the treatment and care procedures for the identified condition.
5. With your working group, present your case study findings to the rest of the class.
6. With your working group, design and deliver patient and family education messages about an emergency condition.
7. Observe, discuss, and practice the procedure for using a triangular bandage as an arm sling.
8. Observe, discuss, and practice the procedures for splinting fractures.
9. Observe, discuss, and practice the procedure for reducing a dislocated shoulder.
10. Observe discuss, and practice the procedure for bandaging a sprained joint.
11. Observe, discuss, and practice the procedures for applying a triangular bandage to hold dressings to a shoulder, hip, groin, elbow, knee, hand, foot, or stump.
12. With a small group of fellow students, be on call at a hospital emergency room or health center to observe how emergency problems are handled.



## 6.1 FRACTURES

A fracture is a broken bone. Fractures occur when a bone is bent or struck with a strong force. The break may be a simple fracture or a compound fracture. A simple fracture is one in which the broken bone has not cut through the skin. A compound fracture is one in which the bone has cut through the skin, exposing an end of broken bone. The risk of infection is much greater in a compound fracture than in a simple fracture.



### CLINICAL PICTURE

#### a. Presenting complaint

The patient with a fracture may have an obvious deformity. He will complain of pain at the affected site. He will resist attempts to move the injured limb. He may feel dizzy and weak.

#### b. Medical history

Ask the patient to describe how the accident occurred. Ask him whether he heard a *snapping sound*. Ask about any bleeding. Ask about any pain. Find out whether the patient became unconscious.

c. Physical examination

First examine the patient for signs of trouble breathing, severe bleeding, or shock.

Compare the injured limb to the healthy limb. Look for *deformity* or *swelling* around the injury. The *limb* may be *bent* or *twisted*.

Look for any piece of broken bone protruding through the skin. You may only see a surface wound if the bone has slipped back beneath the skin.

### COURSE AND COMPLICATIONS

Fractures of long bones, such as the femur, can cause severe bleeding and shock. Infection is the most dangerous complication of a compound fracture. Infection can lead to osteomyelitis. Improper healing can cause a permanent deformity. The two ends of the bone may not rejoin.

### PATIENT CARE

Always check the patient's airway first. Be sure he is breathing properly before proceeding. Stop any bleeding. Treat the patient for shock. Fractures of the femur and hip often lead to shock because a great amount of blood may be lost into the tissues of the upper leg.

Do not move the patient until you have assessed all of his injuries and splinted his injured limb, unless he is in danger of further injury.

Remove or cut away clothing around a compound fracture. Control bleeding by applying pressure through a clean dressing over the wound. Do not wash or clean the wound. Do not attempt to replace a protruding bone. Cover the bone and the wound with a clean dressing.

Lift or move an unconscious patient as if he has suffered an injury to his neck or spine.

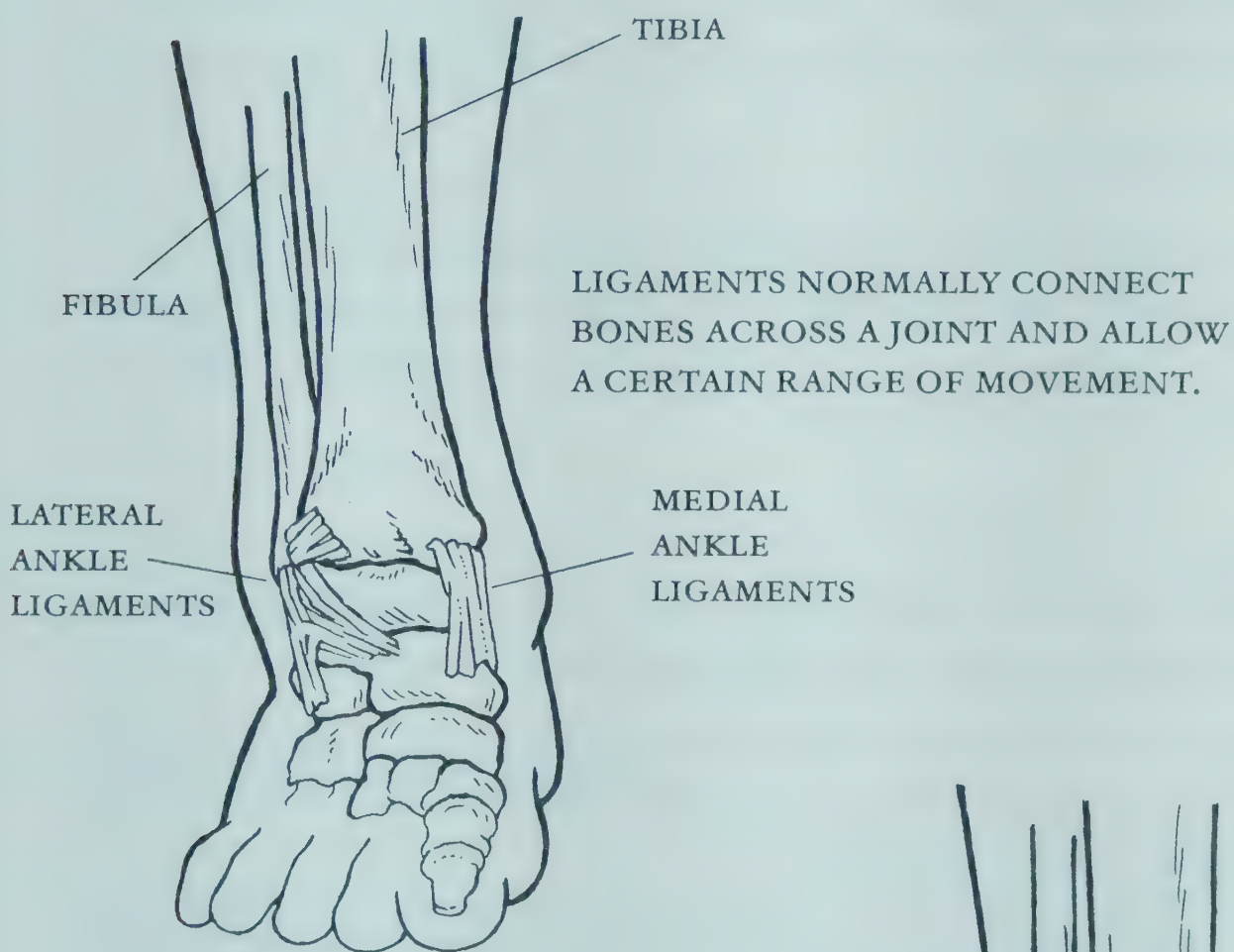
Use splints to prevent movement of a fractured limb. Splints reduce bleeding, pain, and further injury to soft tissue. See Patient Care Procedures.

Transfer to a hospital any patient in whom you suspect there is a fracture. The hospital staff can use an X-ray to confirm the fracture and set the bone.



## 6.2 SPRAINS

Sprains occur when a joint is twisted beyond its normal range of movement. Ligaments and tendons tear which bind bones together at joints. Ankles and wrists are most often sprained.



COMPARE THE LATERAL ANKLE LIGAMENTS HERE TO THOSE IN THE NORMAL ANKLE ABOVE. HERE, FOOT IS SHIFTED OVER TO THE MIDLINE AND THE LATERAL ANKLE LIGAMENTS HAVE BEEN STRETCHED. IN SEVERE SPRAINS, THE LIGAMENTS ARE COMPLETELY TORN. SOMETIMES A SMALL PIECE OF BONE IS TORN OFF AT THE TIME OF THE SPRAIN.



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## CLINICAL PICTURE

### a. Presenting complaint

The patient will complain of pain in the injured joint. He will say that moving the joint causes pain.

### b. Medical history

Ask the patient how the accident occurred. Find out which way the joint was bent. Ask the patient whether he heard a snap. A sprain and fracture often occur together.

### c. Physical examination

Examine the affected joint. You will find it *swollen, red, and very tender*. The *skin* over the joint may be *black and blue*.

## COURSE AND COMPLICATIONS

Sprains that are not treated properly will heal poorly and cause considerable pain. Poorly healed sprains will be sprained more easily later because the ligaments are weak. Weak or poorly healed ligaments may also lead to a dislocation.

## PATIENT CARE

Cover the sprained joint. Apply an ice pack to reduce the swelling. Bandage the joint. See Patient Care Procedures.

Elevate the leg if a knee or ankle is sprained. The patient should not put any weight on a sprained knee or ankle. He should keep the leg elevated for twenty-four hours.

Thirty-six hours after the injury, apply a warm water bag to the sprain or soak it in warm water. Refer patient with severe sprains to a hospital.



### 6.3 DISLOCATIONS

A dislocation occurs when a bone is displaced from its joint socket. Dislocations cause symptoms much like fractures, but the pain is mostly in the joint. When the bone is out of place, the patient will not be able to move the limb through its usual range of motion. Bones at the shoulder, elbow, finger, and thumb are most often dislocated.

Tissues around a joint are often torn when a bone is dislocated. The bone will come out of its joint again unless the tissues are properly healed. Shoulder dislocations often recur because of improperly healed tissues.

#### CLINICAL PICTURE

a. Presenting complaint

The patient will complain of pain in the injured joint. He will tell you that he cannot move the affected limb. Movement of the injured joint will cause pain.

b. Medical history

Ask the patient how the dislocation happened. What was he doing when the pain began? Ask him whether he has had this problem before. Ask him if he feels pain in any other part of his body.

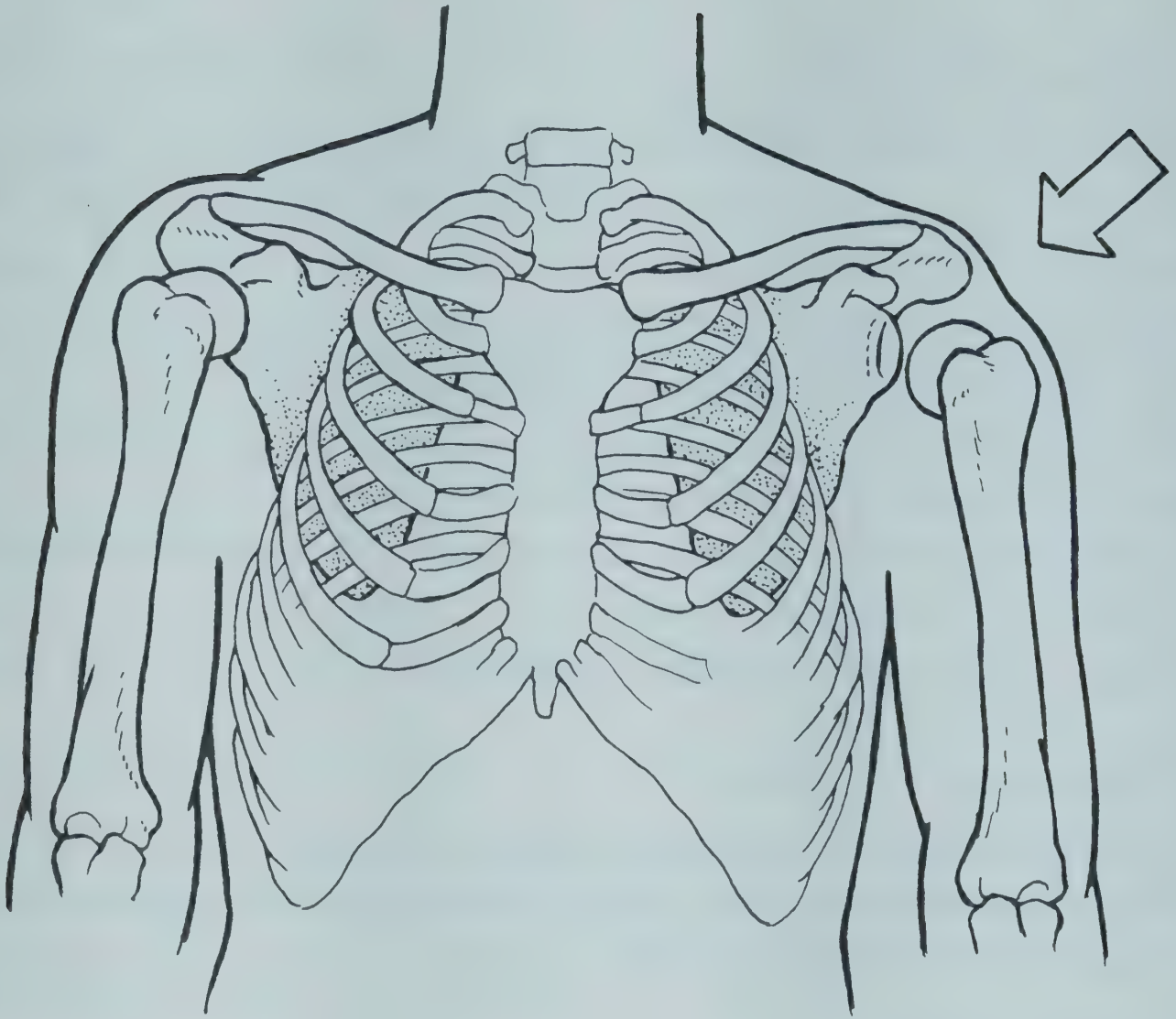
c. Physical examination

Examine the injured joint for *deformity* and *tenderness*. Ask the patient to move the affected limb. Suspect a dislocation if he cannot move the limb. Check for a shoulder dislocation by gently moving the patient's elbow onto his chest and asking him to touch his opposite shoulder. He will not be able to move his arm if his shoulder is dislocated.

Compare joints on opposite sides of the body. The shape of the shoulder changes when the head of the humerus is displaced from the shoulder joint.

#### COURSE AND COMPLICATIONS

Dislocations tend to recur. Therefore you should refer patients with dislocations to the hospital. Dislocations of the shoulder can be reduced. However, if the dislocation recurs very often, the patient will need surgical repair of the joint.



#### PATIENT CARE AND PREVENTION

Restore the shoulder to its proper position using the gravity method or the traction method. See Patient Care Procedures. Splint other dislocations and refer the patient to a hospital. Advise patients who suffer recurring dislocations to go to a hospital for treatment.

### 6.4 FIRST DEGREE BURNS

Sunburn is the most common type of first degree burn. The burn is caused by long exposure to low heat.

#### CLINICAL PICTURE

##### a. Presenting complaint

The patient will complain of pain at the site of a first degree burn.



b. Medical history

The patient will say that he has been exposed to the sun or low intensity heat.

c. Physical examination

The patient will be uncomfortable. He will not allow clothing to touch the burned area. His *skin* will be *red*. Little or no edema will be present.

### COURSE AND COMPLICATIONS

A first degree burn heals within a week. It will not leave a scar.

### PATIENT CARE

Cover the burned area with cool, clean water as quickly as possible. You may apply cool compresses. Cool water reduces the effects of the burn. Cover the burn with dry, sterile dressing if it is in an area that is difficult to keep clean. Do not apply lotions or ointments to the skin.

## 6.5 SECOND DEGREE BURNS

Second degree burns are usually caused by hot liquids such as boiling water. The heat that produces the burn rarely is higher than 100° C, the boiling point of water. Second degree burns caused by liquids are often called scalds.

### CLINICAL PICTURE

a. Presenting complaint

The patient will frequently be a child. He will be in *severe pain*, anxious, and thirsty. He may be unconscious.

b. Medical history

Ask how the patient was burned. Did a liquid or a hot object cause the burn? Was the child in a burning house? Ask when blisters formed on the burn. Find out whether the patient was unconscious and for how long.

c. Physical examination

Check the patient's breathing and examine him for shock. Hot gases or smoke could affect his ability to breathe. Burns over a large part of his body can quickly lead to shock.

Examine the burned skin. Check for *blisters*, *tenderness*, and *red skin*. Use the rule of nines to determine how much of the patient's body suffered burns. Not all the signs of a second degree burn will be immediately clear. Examine the patient again after four hours and once more after another twenty-four hours. You may decide to transfer the patient if the signs of second degree burns increase on a larger area of the patient's body.

### COURSE AND COMPLICATIONS

The loss of fluid into the tissues from a second degree burn can lead to shock. Shock develops within hours after a burn has occurred. Second degree burns easily become infected. Infection in a large burn is a serious problem. Tetanus infections are also possible.

### PATIENT CARE

Transfer an adult with second degree burns over more than ten percent of his body to a hospital. Transfer a child with second degree burns over more than five percent of his body to a hospital. Also transfer any patient who has inhaled hot gas or smoke.

When you transfer a patient with severe burns to a hospital, follow these steps.

a. Elevate the burned part

Keep the burned part of the patient's body above the level of his heart. Raising the burned part helps reduce swelling and the loss of body fluids.

b. Cover the burned part

Cover the burn with dry, sterile dressing or a washed and ironed sheet.

c. Treat for pain

Give the patient aspirin for mild pain and pethidine for more severe pain. See Patient Care Guides.

d. Replace lost body fluids



Replace lost body fluids by starting an IV with Ringer's lactate or normal saline solution. Calculate the amount of body fluids to be given during the next eight hours by multiplying the patient's weight by the percent of his body burned, and adding to this amount 500 ml for an adult and 250 ml for a child.

Do not break any blisters or try to remove charred clothing. Do not try to wash the burn. Do not put any lotions or ointments on the burn. Lotions and ointments increase the risk of infection.

For patients you do not transfer, use soapy water to clean burns of exudate and debris. Cut away loose tissue and broken blisters with forceps and scissors. Do not break intact blisters. Cover the burn and keep the affected part above the level of the heart. Replace the dressings daily.

## 6.6 THIRD DEGREE BURNS

Third degree burns are usually caused by fire or hot metal. The temperatures usually are higher than the boiling point of water. Third degree burns destroy the whole thickness of skin.

### CLINICAL PICTURE

#### a. Presenting complaint

The patient may be unconscious and may not be breathing. Hot gases and smoke can cause respiratory failure. The patient's body may be charred. He will not feel much pain. But he will be anxious and thirsty. He may have other injuries.

#### b. Medical history

Find out how the patient was burned. He may not be breathing if he was exposed to hot gases or smoke. If the patient is unconscious, find out how long he has been that way.

#### c. Physical examination

First, examine anxious and restless patients for signs of respiratory distress. Then examine the patient for signs of shock.

The burned skin will be *white* or *charred*. All layers of the skin will be burned through. *Fat* beneath the damaged skin will be *exposed*. *Body fluids* will ooze from the burn.

### COURSE AND COMPLICATIONS

A person who inhales smoke and hot gases risks damaging his airway and lungs. Smoke and hot gases cause swelling and inflammation of the trachea and throat. These patients must be treated in a hospital if they are to survive. Third degree burns also leave deep scars.

### PATIENT CARE

A blocked airway is the most immediate danger to a patient who has inhaled smoke or hot gas. Check the patient's breathing. If his trachea or lungs are damaged, transfer him to a hospital as quickly as possible.

Transfer patients with any third degree burns to a hospital. Skin grafts will reduce scarring which can have serious effects on a person's face, hands, feet, genitals, or joints.

When you transfer the patient, follow the same steps listed for transferring patients with second degree burns:

- Elevate the burned part
- Cover the burned part
- Treat for pain
- Replace lost body fluids

### PREVENTION

Children between one year and four years old are most frequently injured by fire and hot liquids. Children do not understand the danger of heat. They are curious. They move quickly. They often get into dangerous situations.

Whenever you treat or visit a patient who has been burned, ask about the accident. Find out how it happened. Ask how such an accident can be prevented. Suggest ways to prevent future accident burns.

Teach people first aid for minor burns. Tell them to soak fresh burns in cool water. Urge them not to use ointments or lotions because of the risk of infection.



## REVIEW QUESTIONS

### Fractures, Sprains, Dislocations, and Burns

1. Match the statements in the first column with the problems listed in the second column.

_____ Snapping sound, severe pain, and deformity	A. Sprain
_____ Abnormal position of a joint and loss of function of that joint	B. Dislocation
_____ Caused by stretching or tearing of a ligament or tendon	C. Fracture
_____ Raise the arm or leg and apply ice packs	
_____ Splint the joints on both sides of the injured site	

2. TRUE (T) or FALSE (F)

- \_\_\_\_\_ A broken bone is called a dislocation.
- \_\_\_\_\_ A simple fracture is one in which the bone breaks through the skin.
- \_\_\_\_\_ Sprains occur when joint ligaments are stretched.
- \_\_\_\_\_ Bleeding does not occur in severe sprains.
- \_\_\_\_\_ Displacement of the ends of a bone from a joint socket is called a fracture.
- \_\_\_\_\_ Shoulder dislocations often recur.
- \_\_\_\_\_ Do not clean or wash a compound fracture. Do not replace the protruding bone.
- \_\_\_\_\_ You may move a patient with a fracture before splinting his broken bone.

3. A man with a fractured humerus is brought to you. The broken end of the bone sticks through his skin. He was in an auto accident. How will you care for the patient?
4. A patient tells you that he fell down while riding his bicycle. He heard a snapping sound in his upper arm. What signs will you look for to diagnose the problem?
5. TRUE (T) or FALSE (F)  
\_\_\_\_\_ Two factors determine the seriousness of burns. These factors are the depth of the skin burned and the extent of the burn.
6. List the degrees of a burn and briefly describe them.
7. List three reasons you would refer a patient with burns to a hospital.
8. A five-year-old child has been burned with boiling water on the front of his chest, his abdomen, and the front of his upper arm. He weighs 18 kg.
  - a. What percentage of his skin is burned?
  - b. How will you treat the child for these second degree burns?

Fluids:	Antibiotics:
Wound care:	Tetanus prevention:
Analgesics:	Referral:



9. A forty-year-old man who was caught in a house fire is brought to your clinic. The front of both his legs from the knees down are red and blistered. The tops of both his hands and his back from his neck to his waist are burned in the same way. The man weighs 70 kg.

- a. What is the degree of these burns?
- b. What percent of the man's skin is burned?
- c. How would you treat this patient?

Fluids:

Wound care:

Analgesics:

Antibiotics:

Tetanus prevention:

Referral:

10. Why does an adult with second degree burns on more than fifteen percent of his body enter shock?

11. A child who fell into an open fire has burned his buttocks, the back of his thighs, and his back to his neck. How will you know what degree of burn the child has suffered?

## REVIEW EXERCISE

### --- Case Study 89 ---

Name of Patient: Coley, John

Sex: Male

Date of Birth: 4 April 1954

Date of Visit: 30 April 1980

Vital Signs:      Temperature      37° C  
                         Pulse                      120  
                         Respirations      28  
                         Blood pressure      90/60  
                         Weight                      65 kg

Presenting Complaint and Medical History: The patient complains of pain in his left thigh. He cannot move the leg. He says he was riding a bicycle to his office when he hit a rock on the road and fell. He heard a snapping sound and felt severe pain. He could not move because of the pain. His thigh began to swell. He has never hurt that leg before.

Physical Examination: The man is in severe pain. He does not move or allow himself to be moved. He does not allow anyone to touch his leg. His breathing is rapid and shallow. His lips are dry. His skin is cold and clammy. His left thigh is bent and crooked. No wound is visible on the skin. The skin of the left thigh is hot and tender. The left leg is shorter than the right. His heart sounds are normal. His chest is clear. His abdomen is flat and non-tender.

Study the information given above, then answer these questions.

1. What is the diagnosis?
2. What information in the case study was most helpful to you when you made your diagnosis?
3. Was any information missing from the case study that would have helped you make the diagnosis?
4. How would you treat this patient?
5. What advice would you give this patient?



# REVIEW EXERCISE

## Case Study 90

Name of Patient:	Das, Jayshree		
Sex:	Female		
Date of Birth:	12 June 1964		
Date of Visit:	13 May 1980		
Vital Signs:	Temperature	37.2° C	
	Pulse	80	
	Respirations	14	
	Blood pressure	110/70	
	Weight	40 kg	
Presenting Complaint and Medical History:	The patient complains of severe pain in her left ankle. She was climbing stairs when she slipped and twisted her left foot. The twist was painful. The accident happened about four hours ago. The patient says she cannot put any weight on that foot. She has never suffered any injury to that foot before.		
Physical Examination:	The patient does not put her foot down on the floor. Her left ankle is swollen, hot, and tender. She cannot move it. Her skin is black-and-blue at the ankle. She has no sign of any other injury. Her chest is clear. Her heart sounds are normal. Her abdomen is non-tender and flat. No organs are palpable.		

Study the information given above, then answer these questions.

1. What is the diagnosis?
2. What information in the case study was most helpful to you when you made your diagnosis?
3. Was any information missing from the case study that would have helped you make the diagnosis?
4. How would you treat this patient?
5. What advice would you give this patient?

## REVIEW EXERCISE

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### Case Study 91

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Name of Patient: Adamu, Phillip

Sex: Male

Date of Birth: 3 January 1952

Date of Visit: 13 December 1981

Vital Signs:      Temperature      37°C  
                         Pulse                      78  
                         Respiration        13  
                         Blood pressure    120/80  
                         Weight                65 kg

Presenting Complaint and Medical History: The patient has pain in his right shoulder. He says that he cannot move his arm. He stumbled when he was carrying a bucket of water. The bucket jerked his right arm. He felt a sharp pain in the right shoulder. He dropped the bucket and found that he could not move his arm.

Past medical history: The patient has had this problem before. It happens whenever his right arm is suddenly jerked or pulled.

Physical Examination: The patient is in pain. He holds his right arm at the elbow. The right shoulder looks flat compared to the left shoulder. The patient cannot place his right hand on his left shoulder. His right shoulder is swollen and tender. No other injuries are apparent. His chest is clear. His heart sounds are normal. His abdomen is non-tender and flat.

Study the information given above, then answer these questions.

1. What is the diagnosis?
2. What information in the case study was most helpful to you when you made your diagnosis?



3. Was any information missing from the case study that would have helped you make the diagnosis?
4. How would you treat this patient?
5. What advice would you give this patient?

## REVIEW EXERCISE

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### *Case Study 92*

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Name of Patient: McMann, Joanna

Sex: Female

Date of Birth: 19 June 1976

Date of Visit: 13 August 1981

Vital Signs:      Temperature      37° C  
                         Pulse                      130  
                         Respirations      28  
                         Weight                14 kg

Presenting Complaint and Medical History: The child was playing near a stove about two hours ago when boiling rice spilled on her. She has blisters across her chest, abdomen, and the front of her legs to her knees. She is in pain and she feels thirsty.

Physical Examination: The patient is a small frail girl. She looks anxious and pale. Large blisters cover her chest, abdomen, and legs. Some blisters have burst. A watery fluid oozes out. The epidermis is broken in many places. The patient's hands and feet are cold. She is sweating. Her respirations are rapid and she is drowsy.

Study the information given above, then answer these questions.

1. What is the diagnosis?
2. What information in the case study was most helpful to you when you made your diagnosis?
3. Was any information missing from the case study that would have helped you make the diagnosis?
4. How would you treat this patient?
5. What advice would you give this patient?



# SKILL CHECKLIST

## Splinting a Fractured Upper Arm

This checklist has two purposes:

- 1) Students should use it as a guide for checking their skills or other students' skills.
- 2) Supervisors should use it when they evaluate how well students can splint a fractured upper arm.

After observing a student, enter a rating in the appropriate column.

Rating: 1 = Inadequate  
 2 = Needs improvement  
 3 = Satisfactory  
 4 = Above average  
 5 = Excellent

When splinting a fractured upper arm:

YES NO RATING COMMENTS

1. Collect your equipment and materials				
2. Tell the patient what you are going to do				
3. If the patient's elbow is not injured, place his forearm across his chest with his fingertips touching his armpit on the opposite side. Do not try to bend the arm if the patient's elbow is injured.				
4. Put padding between his upper arm and his chest				
5. Support his arm in a sling. Tie the arm against the chest wall with a broad bandage				
6. Lay the patient down. Put his injured arm by his side with his palm against his thigh				

	YES	NO	RATING	COMMENTS
7. Put padding between his arm and his body				
8. Tie the arm to the body in three places: around the upper arm and trunk; around the forearm and trunk; and around the wrist and thigh				
9. Transfer the patient to a hospital on a stretcher				



SKILL CHECKLIST

Splinting a Fractured Forearm or Wrist

This checklist has two purposes:

- 1) Students should use it as a guide for checking their own skills or other students' skills.
- 2) Supervisors should use it when they evaluate how well students splint a fractured forearm or wrist.

After observing a student, enter a rating in the appropriate column.

Rating: 1 = Inadequate  
2 = Needs improvement  
3 = Satisfactory  
4 = Above average  
5 = Excellent

When splinting a fractured forearm or wrist:

	YES	NO	RATING	COMMENTS
1. Collect your equipment and materials				
2. Tell the patient what you are going to do				
3. Pad the splint and immobilize the broken bone				
4. Bend the elbow and apply an arm sling. Keep the thumb pointing upward and the hand slightly higher than the elbow				

SKILL CHECKLIST

Splinting a Fractured Shoulder Blade

This checklist has two purposes:

- 1) Students should use it as a guide for checking their own skills or other students' skills.
- 2) Supervisors should use it when they evaluate how well students can splint a fractured shoulder blade.

After observing a student, enter a rating in the appropriate column.

Rating: 1 = Inadequate  
2 = Needs improvement  
3 = Satisfactory  
4 = Above average  
5 = Excellent

When splinting a fractured shoulder blade:

YES NO RATING COMMENTS

1. Collect your equipment and materials				
2. Tell the patient what you are going to do				
3. Place a soft pad in the patient's armpit				
4. Use a triangle bandage to support the upper limb on the injured side in an arm sling. Position the fingertips near the opposite shoulder				
5. Tie the upper limb to the chest with a broad bandage applied over the sling				



# SKILL CHECKLIST

## Splinting a Fractured Collar Bone

This checklist has two purposes:

- 1) Students should use it as a guide for checking their own skills or other students' skills.
- 2) Supervisors should use it when they evaluate how well students can splint a fractured collar bone.

After observing a student, enter a rating in the appropriate column.

Rating: 1 = Inadequate  
 2 = Needs improvement  
 3 = Satisfactory  
 4 = Above average  
 5 = Excellent

When splinting a fractured collar bone:

YES NO RATING COMMENTS

1. Collect the equipment and materials				
2. Tell the patient what you are going to do				
3. Fold two triangular bandages into long, narrow strips				
4. Lay a strip on each shoulder. Pass an end of each strip beneath the arm. Tie the ends at the back. You should now have a loop around each shoulder				
5. Pad the patient's back between his shoulder blades				
6. Use a third bandage to tie the two loops together. Tightening this bandage will pull the shoulders back and align the broken ends of the collar bone				

# SKILL CHECKLIST

## Splinting a Fractured Upper Leg

This checklist has two purposes:

- 1) Students should use it as a guide for checking their own skills or other student's skills.
- 2) Supervisors should use it when they evaluate how well students splint a fractured upper leg.

After observing a student, enter a rating in the appropriate column.

Rating: 1 = Inadequate  
 2 = Needs improvement  
 3 = Satisfactory  
 4 = Above average  
 5 = Excellent

When splinting a fractured upper leg:

YES NO RATING COMMENTS

1. Collect your equipment and materials				
2. Tell the patient what you are going to do				
3. If you need to transport the patient only a short distance on a smooth road, place a blanket or a cloth between the patient's legs and tie the legs together				
4. Apply an external splint if you need to transport the patient a long distance or on a rough road. To apply an external splint, pad two splint boards. One board should reach from the patient's groin to his heel. The other board should reach from his armpit to his heel. Put extra padding at the ankle and knee				



YES NO RATING COMMENTS

5. Position the splint boards against the sides of the injured leg. Firmly tie the boards at the ankle, knee, loin, thigh, hips, abdomen, and chest				
6. Cover an open fracture with a clean dressing				
7. Transfer the patient to a hospital on a stretcher				

SKILL CHECKLIST

Splinting a Fractured Lower Leg

This checklist has two purposes:

- 1) Students should use it as a guide for checking their own skills or other students' skills.
- 2) Supervisors should use it when they evaluate how well students can splint a fractured lower leg.

After observing a student, enter a rating in the appropriate column.

Rating: 1 = Inadequate

2 = Needs improvement

3 = Satisfactory

4 = Above average

5 = Excellent

When splinting a fractured lower leg:

	YES	NO	RATING	COMMENTS
1. Collect your equipment and materials				
2. Tell the patient what you are going to do				
3. Use bandages to tie the patient's injured leg to his uninjured leg if you only need to transport him a short distance on a smooth road				
4. Cover a compound fracture with a sterile dressing. Apply pressure through the dressing to control any bleeding				
5. If you have only one splint, place it between the patient's legs. Pad the knees and ankles. Tie the legs together				



	YES	NO	RATING	COMMENTS
6. If you have two splints, place one on each side of the injured leg. Pad the splints at the ankle and knee. Tie the splints to the injured leg				
7. Raise the injured leg, if possible. Transfer the patient to a hospital on a stretcher				

## SKILL CHECKLIST

### Splinting a Fractured Kneecap

This checklist has two purposes:

- 1) Students should use it as a guide for checking their own skills or other students' skills.
- 2) Supervisors should use it when they evaluate how well students can splint a fractured kneecap.

After observing a student, enter a rating in the appropriate column.

Rating: 1 = Inadequate      4 = Above average  
2 = Needs improvement    5 = Excellent

When splinting a fractured kneecap:	1 = Needs improvement	2 = Fair	3 = Satisfactory	4 = Excellent
YES				
NO				

YES	NO	RATING	COMMENTS
-----	----	--------	----------

1. Collect your equipment and materials				
2. Tell the patient what you are going to do				
3. Place the patient on his back. Support his head and shoulders				
4. Raise the injured leg and support it				
5. Place a splint from the buttocks to below the heel. Pad the splint at the knee and heel				
6. Tie the splint to the leg. Use a figure-of-eight bandage around the heel and foot. Use broad bandages around the thigh and lower leg				
7. Support the injured limb. Transfer the patient to a hospital				
8. Tell the patient not to move his injured leg				



## SKILL CHECKLIST

## Splinting a Fractured Ankle or Foot

This checklist has two purposes:

- 1) Students should use it as a guide for checking their own skills or other students' skills.
- 2) Supervisors should use it when they evaluate how well students can splint a fractured ankle or foot.

After observing a student, enter a rating in the appropriate column.

Rating: 1 = Inadequate                      4 = Above average  
2 = Needs improvement                  5 = Excellent

When splinting a fractured ankle or foot:	1 = Needs improvement	2 = Good	3 = Satisfactory
1. Properly positioned	YES	NO	
2. Properly padded	YES	NO	
3. Properly secured	YES	NO	
4. Properly supported	YES	NO	
5. Properly immobilized	YES	NO	
6. Properly checked	YES	NO	
7. Properly documented	YES	NO	
8. Properly transported	YES	NO	
9. Properly reassessed	YES	NO	
10. Properly released	YES	NO	

YES	NO	RATING	COMMENTS
-----	----	--------	----------

1. Collect your equipment and materials				
2. Tell the patient what you are going to do				
3. Lay the patient on his back and remove his shoe and sock				
4. Raise the injured leg				
5. Cover an open wound with a sterile dressing. Do not clean the wound				
6. Splint the ankle and foot with a pillow or folded blanket. The pillow or folded blanket should reach from the sole of the foot to the ankle and to the toes				
7. Secure the splint with a figure-of-eight bandage or with a bandage around the ankle and around the sole of the foot				
8. Transfer the patient to a hospital with his leg raised				

# SKILL CHECKLIST

## Using a Triangular Bandage to Make an Arm Sling

This checklist has two purposes:

- 1) Students should use it as a guide for checking their own skills or other students' skills.
- 2) Supervisors should use it when they evaluate how well students use a triangular bandage to make an arm sling.

After observing a student, enter a rating in the appropriate column.

Rating: 1 = Inadequate  
 2 = Needs improvement  
 3 = Satisfactory  
 4 = Above average  
 5 = Excellent

When using a triangular bandage to make an arm sling:

YES NO RATING COMMENTS

1. Use a triangular bandage or fold a 1 m square bandage into a triangle				
2. Place the bandage across the patient's chest with the long side parallel to the patient's body and the point of the triangle nearest the elbow of the injured arm				
3. Tell the patient to lay his forearm on the bandage so that his fingers lie near the opposite armpit				
4. Fold the bandage up over the patient's arm. Bring both ends of the bandage around the patient's neck and tie them behind				



	YES	NO	RATING	COMMENTS
5. Twist and tie or pin up the point of the bandage at the patient's elbow				
6. Strap the arm to the chest with another triangular bandage folded several times				

SKILL CHECKLIST

Restoring a Dislocated Shoulder

This checklist has two purposes:

- 1) Students should use it as a guide for checking their skills or other students' skills.
- 2) Supervisors should use it when they evaluate how well students can restore a dislocated shoulder.

After observing a student, enter a rating in the appropriate column.

Rating: 1 = Inadequate  
2 = Needs improvement  
3 = Satisfactory  
4 = Above average  
5 = Excellent

When restoring a dislocated shoulder:

YES NO RATING COMMENTS

1. Collect your equipment and materials				
2. Tell the patient what you are going to do				
3. When using the gravity method for adults, ask the patient to lie face down on a table. Let the affected arm hang down over the side of the table				
4. Relax the shoulder muscles by gently pulling down on the arm with firm and steady pressure for about ten to twenty minutes				
5. Gently turn the upper arm, allowing the head of the arm bone to snap back into the shoulder joint				



	YES	NO	RATING	COMMENTS
6. Use traction for children and for adults when the gravity method has not succeeded				
7. Give patients an appropriate dose of valium				
8. When the valium has relaxed the muscles and reduced the discomfort, lay the patient on the floor on his back				
9. Remove your shoe and place your foot in the armpit on the dislocated side				
10. Pull downward on the patient's wrist while gently rotating the arm. Continue this for ten to fifteen minutes or until the head of the arm bone snaps back				
11. Apply a triangular bandage as a sling and strap the arm to the body. If you cannot restore the dislocated arm, refer the patient to the hospital				

SKILL CHECKLIST

Bandaging a Sprained Joint

This checklist has two purposes:

- 1) Students should use it as a guide for checking their skills or other students' skills.
- 2) Supervisors should use it when they evaluate how well students can bandage a sprained joint.

After observing a student, enter a rating in the appropriate column.

Rating: 1 = Inadequate  
2 = Needs improvement  
3 = Satisfactory  
4 = Above average  
5 = Excellent

When bandaging a sprained joint:

	YES	NO	RATING	COMMENTS
1. Collect your equipment and materials				
2. Tell the patient what you are going to do				
3. Start bandaging a sprained ankle on the inner side of the foot. Fix the bandage with two or three turns around the foot				
4. Bring the bandage diagonally upward and across the front of the foot, then around the ankle and diagonally down across the front of the foot and under the instep				
5. Make several turns, each one overlapping the previous one by two-thirds the width of the bandage				



	YES	NO	RATING	COMMENTS
6. When bandaging a sprained wrist or hand, fix the bandage with two turns around the palm of the hand. Bring the bandage diagonally across and around the wrist				
7. Again, bring the bandage diagonally across the palm of the hand, over the heel of the hand to between the thumb and forefinger, behind the palm, and then back to the wrist				
8. This figure-of-eight is repeated as many times as necessary to fix the dressing properly. Use pins or tape to fix the ends. Split a gauze bandage and tie the ends together				

## *Unit 7*

# **Trauma to the Eye, Head, Spinal Column, Chest, and Abdomen**

### STUDENT GUIDE

#### OBJECTIVES

1. Describe the signs and symptoms of trauma to the:
  - Eye
  - Head
  - Spinal column
  - Chest
  - Abdomen
2. Interview a patient or his relative and examine the patient to diagnose trauma to the eye, head, spinal column, chest, and abdomen.
3. Treat and care for patients' trauma to the eye, head, spinal column, chest, or abdomen. Apply a triangular bandage to a patient's head, scalp, or chest.
4. Demonstrate how to place a patient who has a possible fracture of his spine on a stretcher or blanket.
5. Tell patients and their families how to care for injuries at home and how to prevent accidents from occurring.

#### LEARNING ACTIVITIES

1. Discuss symptoms and signs of trauma to the eye, head, spinal column, chest, and abdomen.
2. Practice taking the medical history and diagnosing trauma to the eye, head, spinal column, chest, and abdomen using patient information created for role-play by you and your fellow students.
3. Take part in a discussion of your role-play.



4. In your working group, identify the emergency condition in a case study given to you by your instructor. Also, outline the treatment and care procedures for the identified condition.
5. With your working group, present your case study findings to the rest of the class.
6. With your working group, design and deliver patient and family education messages about a traumatic condition.
7. Observe, discuss, and practice the procedures for applying a triangular bandage to the head, scalp, and chest.
8. Observe, discuss, and practice the procedures for placing an injured patient on a stretcher or a blanket.
9. With a small group of fellow students, be on call at a hospital emergency room or health center during the evening in order to observe how emergency problems are handled.

## 7.1 TRAUMA TO THE EYE

Foreign bodies and chemicals cause most traumas to the eyes. A foreign body can be any object, blunt or sharp. The chemicals can be any acid or cleaning agent that burns body tissues.

### CLINICAL PICTURE

#### a. Presenting complaint

Eye trauma will cause *severe pain*. The patient may not be able to see. The skin around his eye may be black-and-blue. His eyes may burn.

#### b. Medical history

Find out how the accident happened. Find out whether a loss of vision was sudden or gradual. Find out whether the patient was working with explosives. Find out whether his eye was bleeding. Ask whether any chemicals or burning agents spilled into his eye.

#### c. Physical examination

Check for *loss of vision*. Look for signs of injury to the eyelid. Examine the skin for discoloration. Examine the eye for any sign of chemical burns. Check the conjunctiva for bleeding. Examine the cornea and white of the eye for damage. Examine the pupils for reaction to light. Do not move any object sticking into the patient's eye.

### COURSE AND COMPLICATIONS

Any eye injury can lead to infection and loss of sight.

### PATIENT CARE

For trauma to an eye, put a clean gauze bandage over both eyes, even if only one eye is injured. Take the patient to a hospital. He should lie down while being transferred. Treat him for shock and give him aspirin to relieve any pain.



Wash the eye with normal saline if you find no signs of a foreign body or damage to the cornea. Apply warm compresses and apply 1% tetracycline eye ointment four times a day. Keep the eye patched for four days. Give the patient aspirin for pain. Refer him to a hospital if his pain increases or if he starts to lose his sight.

Wash the injured eye with water thoroughly for five to ten minutes if any chemical has burned it. Cover both eyes with clean, dry dressings. Tell the patient not to rub his eye. Give him aspirin for pain. Transfer him to a hospital as soon as possible.

#### PREVENTION

Take care when working with chemicals or sharp instruments. Advise people not to treat eye injuries by themselves. Some medicines may increase the chance of infection.

## 7.2 TRAUMA TO THE HEAD

Falls or blows to the head can cause severe trauma. The injuries may include a concussion, fracture, swelling of brain tissue, and bleeding into the brain.

A simple concussion can cause unconsciousness, but the loss of consciousness will last only for a few minutes. However, a severe concussion can bruise brain tissue and cause bleeding into the brain. Severe brain damage usually, but not always, causes unconsciousness. When a person remains unconscious for a prolonged time, consider him to be in a coma. A coma is a far more serious sign of brain injury than a simple concussion.

Falls can cause skull fractures two ways. First, direct blows to the head can push fragments of the skull into the brain, damaging brain tissue. And second, falls in which a person lands on his feet can push the base of the skull up into brain tissue. A blow to the jaw can cause the same kind of injury. The only sign of such a fracture would be clear or pink fluid draining from the brain out through the nose or ears.

Trauma to the head may also include fractures of bones of the face. The jaw and cheekbone are the most commonly fractured facial bones.



These fractures cause severe pain, unless a nerve has been damaged. If a nerve is damaged, the person will feel no pain. Swelling will soon begin and a large black-and-blue mark will form. You may feel a broken bone if you examine the patient soon after he is injured, before the swelling begins.

A person who has suffered trauma to the bones of his face may have trouble speaking and swallowing. He will also salivate freely. These conditions can block his airway and cause gagging.

### CLINICAL PICTURE

#### a. Presenting complaint

Head injuries usually cause *loss of consciousness*. A conscious patient may complain of *headache*, confusion, *nausea*, *vomiting*, pain, trouble breathing, and dizziness.

#### b. Medical history

A person who suffers trauma to his head may immediately lose consciousness. He gradually wakes up. However, a person who is conscious and alert after an injury may gradually become confused and later lose consciousness. He may start having convulsions and may have trouble breathing. Clear fluid or pink, blood-tinged fluid may leak from his ears or his nose. He may have trouble speaking or swallowing.

#### c. Physical examination

Watch patients who have suffered head injuries for at least twenty-four hours after the accident. The patient may become confused, anxious, or violent. Carefully inspect and feel the patient's skull for any laceration, deformity, swelling, or tenderness.

Watch the patient for convulsions or tremors. One side of his body may start to feel weak. The opposite side of his face may also be affected.

Examine the *pupils* of his eyes. They may be of *unequal size*. One or both pupils may be *widely dilated*. The pupil may not respond to light. Check the patient's body temperature. Look for a *clear or pink fluid* coming from his *ears or nose*. This is a sign of a fractured skull. Look for any airway block. Look for signs of shock.

### COURSE AND COMPLICATIONS

Most people who suffer a concussion recover without much difficulty.



A patient who falls into a coma so deep that his pupils dilate and do not respond to light, however, will not fare well. A head injury can leave a person paralyzed. Emergency care greatly reduces damage to the brain. However, the patient usually dies if damage to brain tissue is severe.

## PATIENT CARE

### a. Put an unconscious patient in the recovery position

Place a patient with signs of trauma to his head in the recovery position so he will not gag on his vomit or saliva. See Patient Care Procedures.

Determine the patient's level of consciousness. The patient may be conscious, partially conscious, confused, or in a coma. Check his state of consciousness frequently. Record what you note and send your notes with the patient to a hospital.

Apply a sterile dressing to any lacerations on the scalp. Frequently check the patient's breathing. Begin mouth-to-mouth respiration, if necessary. Transfer the patient as quickly as possible to a hospital.

### b. Protect the patient's airway

A blocked airway is one of the greatest dangers to a patient who has suffered trauma to his head. Saliva and blood may enter his lungs. Keep the patient's airway clear and open.

Control bleeding by applying direct pressure. Remove false teeth or pieces of broken teeth. Support a broken jaw with a soft bandage. If the patient is conscious, let him lean forward so blood and saliva may drain from his mouth while he is being taken to a hospital.

Put an unconscious patient in recovery position if he has not injured his spine.

### c. Dress deep scalp lacerations

Dress deep scalp lacerations, but do not try to clean them. Opening a scalp wound may cause more bleeding or lead to infection.

If the patient's neck and spinal column are not hurt, you may control bleeding by raising the patient's head. Or you may put gentle pressure on a clean dressing over the wound. Gentle pressure should stop the bleeding. Bandage the dressing in place when you have stopped the bleeding. See Patient Care Procedures.

Treat slight scalp wounds as you would care for lacerations elsewhere on the body.

d. Watch patients for twenty-four hours

Watch for twenty-four to forty-eight hours any patient with a concussion or any patient who awakens after being unconscious from a concussion. Take him to a hospital if he starts to sink into a coma or if he acts disturbed.

### 7.3 TRAUMA TO THE SPINAL COLUMN

Trauma to the spinal column can occur with any injury to the neck or back. Such trauma can damage the spinal cord or nerves coming from it, causing paralysis. The spinal cord can be damaged by a fractured vertebra or compression from severe swelling of soft tissue. Improperly moving a person who has injured his spinal column increases the risk of damage.

Suspect an injury to the spinal column and possible damage to the spinal cord or its nerves in any of these kinds of accidents:

Falls

Blows from heavy objects on the back

Motor vehicle accidents

Blows on the head

Neck lash caused by a collision

#### CLINICAL PICTURE

a. Presenting complaint

A person with a fractured or otherwise injured spinal column will complain of severe pain. He may *feel numb* in parts of his body below the fracture. He may not be able to move his toes, his feet, or his legs. If the fracture is high on the spinal column, he may not be able to move his fingers, hands, or arms.

b. Medical history

Find out how the accident happened. The person with a broken



neck or back may be lying where he fell, unable to move because damage to the spinal cord has caused *paralysis*.

c. Physical examination

Examine a person without moving him when you suspect that he may have a neck or spinal column injury. Any movement could increase the damage to the spinal cord. Treat an unconscious accident victim as if his spinal column were injured.

Look for movement of the patient's arms and legs. Ask the patient to move his toes and fingers. Gently touch his arms and legs. Ask if he can feel your touch.

### COURSE AND COMPLICATIONS

Spinal cord injuries usually lead to paralysis. The paralysis may involve the lower limbs or all four limbs. The patient becomes an invalid for life.

### PATIENT CARE

Transfer patients with spinal column injuries of either the neck or back to a hospital. Follow these steps to prepare the patient for transfer.

- a. Hold the patient's shoulders and hips firmly while you place pads between his thighs, knees, and ankles.
- b. Tie his feet and ankles together with a figure-of-eight knot.
- c. Tie the knees and thighs together with wide bandages made from sheets, towels, or other cloth.
- d. Place a blanket under the patient. See Patient Care Procedures.
- e. Lift the patient onto a stretcher. Use a door or wooden board as long and as wide as the patient if you do not have a stretcher. Support the patient's neck, the curve of his back, and his knees with pads.
- f. Steady the patient's head with pillows placed on both sides. Pillows will prevent movement of the head. Transport the patient to the hospital as gently as possible. Gentleness is more important than speed.

## 7.4 TRAUMA TO THE CHEST

Trauma to the chest occurs when a person is hit, thrown against a solid object, or stabbed. The kind of trauma depends on the accident.

A blow on the chest can fracture ribs. Broken ribs can pierce a lung or cut a blood vessel and cause internal bleeding. A person who is thrown against a solid object may suffer a crushed chest. His sternum and many ribs may be broken. This kind of trauma occurs, for example, to an automobile driver who is thrown against the steering wheel in an accident. Broken ribs, knives, bullets, and any other sharp object can puncture the chest. If the person sucks air into his chest cavity, his lung will collapse. Such a wound is called a sucking chest wound.

### CLINICAL PICTURE

#### a. Presenting complaint

A patient with a chest injury will complain of severe pain. He will have trouble breathing and he may cough up blood.

#### b. Medical history

Coughing and breathing increases pain. Breathing may become rapid and shallow. The patient will be anxious and restless.

#### c. Physical examination

Expect to find *tenderness over a broken rib*. Auscultate the chest. Decreased breath sounds and a dull percussion note are signs of internal bleeding. Check the patient for signs of shock. Monitor his vital signs.

Observe the patient's chest. Note whether both sides of the chest move together when the patient breathes. A *crushed chest* will *collapse when the patient breathes in and expand when he breathes out*. Check his fingernails and lips for *cyanosis*.

Look for lacerations on the chest. When the patient breathes he will *suck air through a penetrating chest wound*. You may see *frothy bubbles* at the wound when he breathes out.



## COURSE AND COMPLICATIONS

Trauma to the chest can cause death when a broken rib or any penetrating object damages the lungs or heart. A crushed chest or sucking chest wound can lead to collapse of the lung, severe respiratory distress, and death.

## PATIENT CARE

Make sure the patient is breathing. Cover a sucking chest wound as quickly as possible. Use your hand or any dressing. Do not remove any object that has penetrated the chest. Removing the object may increase bleeding. Bandage around the object.

Put the arm on the injured side of the chest in a sling if you suspect one or more ribs are broken. Bandage the arm to the chest to make the chest more stable.

Bandage the wound. Treat the patient for shock. Transfer the patient to a hospital without delay.

## 7.5 TRAUMA TO THE ABDOMEN

Abdominal injuries can be caused by blows from blunt to sharp objects. Blunt objects can bruise the abdominal wall, the liver, spleen, kidneys, bladder, and intestines. Torn blood vessels may cause severe internal bleeding.

Sharp objects and bullets can cause severe lacerations of the organs. Contents of the intestines may leak into the abdominal cavity. Peritonitis occurs. The patient may go into shock. Abdominal organs may protrude through the wound in severe lacerations.

## CLINICAL PICTURE

### a. Presenting complaint

The patient with abdominal injury will complain of severe pain and restlessness. He may feel nauseous and vomit.

b. Medical history

The abdominal pain may be local or general. The patient may have *blood in his vomit and urine*. He may lose consciousness from loss of blood. He may also have trouble breathing.

c. Physical examination

Expose the abdomen. Look for abrasions or lacerations. Look at the back for any wounds.

Gently palpate the abdomen in each quadrant. The patient's abdominal muscles may be in spasm. The abdominal wall will feel stiff. You may find *muscle guarding* and *rebound tenderness*. Bowel sounds will be diminished or absent. Look for signs of shock.

### COURSE AND COMPLICATIONS

Lacerated wounds of the abdomen rapidly lead to death because of severe internal bleeding and peritonitis. A ruptured liver or spleen can cause severe internal bleeding and death.

### PATIENT CARE

Treat the patient for shock and monitor his vital signs. Place the patient on his back with his head raised and his knees supported to relax his abdominal muscles. Do not give him fluids by mouth because he will require surgery.

Do not try to push organs protruding from a wound back into the abdomen. Cover the exposed organs with a clean dressing. Dampen the dressing with boiled and cooled water to keep the organs moist. Do not remove any protruding object from the abdomen. Dress the wound so the object does not move.

Give the patient penicillin IV and streptomycin IM. See Patient Care Guides. Rapidly transfer the patient to a hospital.



## REVIEW QUESTIONS

### Trauma to the Eye, Head, Spinal Column, Chest, and Abdomen

1. You see a patient with an injury to his eye. You notice that the cornea is cut and the iris is exposed. What should you do?
2. What would you do for a patient who reports to you that he spilled some detergent into his right eye?
3. List seven signs of a serious head injury.
4. TRUE (T) or FALSE (F)
  - \_\_\_\_\_ A clear, watery fluid or blood tinged fluid from the ear or nose is a sign of a fracture at the base of the skull.
  - \_\_\_\_\_ Widely dilated pupils are not signs of serious brain damage.
  - \_\_\_\_\_ A patient with a damaged spinal cord feels numb below the injury.
  - \_\_\_\_\_ You may move a patient with a fractured neck or spinal column with no danger.
  - \_\_\_\_\_ A crushed chest collapses on breathing in and expands on breathing out.
  - \_\_\_\_\_ You should not cover a sucking chest wound immediately.
  - \_\_\_\_\_ A blunt trauma to the abdomen is no cause for concern.
  - \_\_\_\_\_ Only a penetrating wound of the abdomen can cause internal bleeding.

- \_\_\_\_\_ You should push protruding intestines and abdominal organs back into the abdominal cavity when you treat a patient with an abdominal injury.
  - \_\_\_\_\_ You should treat a major trauma before clearing the patient's airway and controlling any bleeding.
5. List three ways you can recognize an injury to the spinal column.
6. Match the signs in the first column with the problems in the second.
- |  |                                   |
|--|-----------------------------------|
| _____ An open wound sucks air with each breath                     | A. Internal bleeding into abdomen |
| _____ Blood fills the chest cavity                                 | B. Crushed chest                  |
| _____ Muscle guarding and tenderness of abdominal wall             | C. Sucking chest wound            |
| _____ Pain with shallow or deep breathing                          | D. Any fluid or food by mouth     |
| _____ Coughing up blood  | E. Rib fractures                  |
| _____ Chest expands on breathing out and collapses on breathing in | F. Damage to the lungs            |
| _____ In a penetrating injury of the abdomen, do not give          | G. Leads to collapse of lung      |
7. The following steps are used for transporting a patient with a fractured spine to the hospital. Number them in the order you would do them.
- \_\_\_\_\_ Lift the patient onto the stretcher, supporting his neck, the curve of his back and his knees with pads.
  - \_\_\_\_\_ Place the blanket under the patient.
  - \_\_\_\_\_ Tie the feet and ankles together with a figure-of-eight bandage.
  - \_\_\_\_\_ Find a wooden door, board, or stretcher you can use to carry the patient.



- \_\_\_\_\_ Tie his knees and thighs together with wide bandages.
- \_\_\_\_\_ Block his head with a pillow on either side so that the head will not move.
- \_\_\_\_\_ Hold the patient's shoulders and hips firmly while you place pads between his thighs, knees, and ankles.
- \_\_\_\_\_ Transport the patient as gently as possible to the hospital.

8. List four signs of a ruptured abdominal organ.

# REVIEW EXERCISE

## --- Case Study 93 ---

Name of Patient: Koll, Mary

Sex: Female

Date of Birth: 11 May 1950

Date of Visit: 13 July 1979

Vital Signs:      Temperature      38° C  
                         Pulse                      68  
                         Respirations      12  
                         Blood pressure      100/76  
                         Weight                      60 kg

Presenting Complaint and Medical History: The patient is brought in unconscious from a motorcycle accident. The patient was conscious for a few minutes after the accident but then lost consciousness. She vomited while she was being brought to the health center. A relative tells you that the patient's left arm was twitching, and that she lost much blood from a wound on the right side of her head. The patient has not regained consciousness.

Physical Examination: The patient will not wake up even with strong pain. Her respirations are slow and labored. The pupil of her right eye is dilated. She does not react to light. The pupil on the left side is not dilated but responds weakly to light. She has a bleeding laceration of the scalp on the right side of the head. The skull below the laceration is depressed. A pink, blood-tinged discharge comes from the right ear and nostril. Her heart sounds are normal. Her chest is clear. Her abdomen is flat. No signs of damage to the spinal column are detected.

Study the information given above, then answer these questions.

1. What is the diagnosis?



2. What information in the case study was most helpful to you when you made your diagnosis?
3. Was any information missing from the case study that would have helped you make the diagnosis?
4. How would you treat this patient?
5. What advice would you give this patient?

## REVIEW EXERCISE

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### Case Study 94

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Name of Patient: Murray, Fred

Sex: Male

Date of Birth: 16 May 1950

Date of Visit: 17 March 1981

Vital Signs:      Temperature      37° C  
                         Pulse                      86  
                         Respirations      14  
                         Blood pressure      100/80  
                         Weight                      80 kg

Presenting Complaint and Medical History: The patient fell from a coconut tree. He is unable to move. His neck is in an abnormal position. He has severe pain in his neck. His body below the neck is numb. The patient has not lost consciousness. He did not vomit.

Physical Examination: The patient is in severe pain. The neck is bent in an abnormal position. The patient's breathing is slow. His muscle tone is reduced. His heart sounds are normal. His chest is clear. His abdomen is flat and non-tender.

Study the information given above, then answer these questions.

1. What is the diagnosis?
2. What information in the case study was most helpful to you when you made your diagnosis?
3. Was any information missing from the case study that would have helped you make the diagnosis?
4. How would you treat this patient?
5. What advice would you give this patient?

REVIEW EXERCISE

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Case Study 95

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Name of Patient:	Mansfield, George		
Sex:	Male		
Date of Birth:	16 August 1948		
Date of Visit:	19 July 1980		
Vital Signs:	Temperature	37° C	
	Pulse	110	
	Respirations	28	
	Blood pressure	110/80	
	Weight	65 kg	
Presenting Complaint and Medical History:	The patient is bleeding from the right side of his chest. He is in pain. He has trouble breathing. The pain in the chest increases when he takes a deep breath or coughs. He coughs up blood in his sputum. The patient scuffled with a friend. In the scuffle, the patient was stabbed in the chest. He lost about three cups of blood.		
Physical Examination:	The patient, a healthy-looking man, is in severe pain. He has trouble breathing. His lips and nail		



beds are blue. His breathing is rapid and shallow. His skin is cold and clammy. The wound is 1 cm by 1 cm. Frothy bubbles come from the wound when the patient breathes out. He sucks air through the wound when he breathes. The area around the wound is tender. Breath sounds on the right side are decreased. His heart sounds are normal. His abdomen is flat and non-tender.

Study the information given above, then answer these questions.

1. What is the diagnosis?
2. What information in the case study was most helpful to you when you made your diagnosis?
3. Was any information missing from the case study that would have helped you make the diagnosis?
4. How would you treat this patient?
5. What advice would you give this patient?

## REVIEW EXERCISE

*Case Study 96*

Name of Patient:	Smith, Lois
Sex:	Female
Date of Birth:	7 November 1950
Date of Visit:	21 August 1980
Vital Signs:	Temperature 37° C
	Pulse 126
	Respirations 26
	Blood pressure 80/56
	Weight 55 kg

Presenting Complaint and Medical History: The patient has severe pain in her abdomen and she is vomiting. The patient and her husband quarreled. Her husband hit her in the abdomen with his fist about three hours ago. The patient feels severe pain. The pain has increased. The patient is very thirsty. She feels dizzy when she stands. She does not allow anyone to touch her abdomen. No blood is in her vomit.

Physical Examination: The patient is an anxious woman who lies very still. Her respirations are rapid and shallow. Her skin is cold and clammy. She has tenderness at the left upper abdominal area just below the ribs. She has no bruise but shows muscle guarding. Bowel sounds are present. Her chest is clear. Her heart sounds are normal.

Study the information given above, then answer these questions.

1. What is the diagnosis?
2. What information in the case study was most helpful to you when you made your diagnosis?
3. Was any information missing from the case study that would have helped you make the diagnosis?
4. How would you treat this patient?
5. What advice would you give this patient?



## REVIEW EXERCISE

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### Case Study 97

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Name of Patient:	Mill, John	
Sex:	Male	
Date of Birth:	1 March 1952	
Date of Visit:	19 December 1978	
Vital Signs:	Temperature	39° C
	Pulse	110
	Respirations	22
	Blood pressure	110/80
	Weight	75 kg
Presenting Complaint and Medical History:	The patient has been injured in a knife fight. He has severe pain in his abdomen. He has vomited. The fight occurred about eight hours ago. Protruding organs were pushed back into the abdomen. The patient has lost about three cups of blood.	
Physical Examination:	The patient looks anxious and drowsy. He is not moving at all. His respirations are shallow and rapid. His skin is cold and clammy. The wound is tender. He shows muscle guarding and rebound tenderness. His bowel sounds are absent. His chest is clear. His heart sounds are normal.	

Study the information given above, then answer these questions.

1. What is the diagnosis?
2. What information in the case study was most helpful to you when you made your diagnosis?
3. Was any information missing from the case study that would have helped you make the diagnosis?
4. How would you treat this patient?
5. What advice would you give this patient?

SKILL CHECKLIST

Applying a Triangular Bandage  
to the Scalp and Head

This checklist has two purposes:

- 1) Students should use it as a guide for checking their own skills or other students' skills.
- 2) Supervisors should use it when they evaluate how well students can apply a triangular bandage to the scalp and head.

After observing a student, enter a rating in the appropriate column.

Rating: 1 = Inadequate  
2 = Needs improvement  
3 = Satisfactory  
4 = Above average  
5 = Excellent

When applying a triangular  
bandage to the scalp and head:

	YES	NO	RATING	COMMENTS
1. Fold the hem of the bandage 5 cm wide along the base				
2. Stand behind the patient. Place the hem of the bandage on the forehead just above the eyebrows so that the point hangs down at the back of the head				
3. Carry the ends around the head to just above the ears. Cross the ends over the point of the bandage near the nape of the neck. Bring the ends forward around the head, and above the ears				
4. Tie the ends on the forehead close to the hem of the bandage				



	YES	NO	RATING	COMMENTS
5. Steady the head with one hand and draw the point of the bandage down with the other. Turn the point up and secure it to the bandage on the top of the head with a pin or adhesive tape				

SKILL CHECKLIST

Applying a Triangular Bandage to the Chest or Back

This checklist has two purposes:

- 1) Students should use it as a guide for checking their own skills or other student’s skills.
- 2) Supervisors should use it when they evaluate how well students can apply a triangular bandage to the chest or back.

After observing a student, enter a rating in the appropriate column.

Rating: 1 = Inadequate  
2 = Needs improvement  
3 = Satisfactory  
4 = Above average  
5 = Excellent

When applying a triangular bandage to the chest:

	YES	NO	RATING	COMMENTS
1. Stand in front of the patient and place the center of the bandage over the dressing				
2. Put the point of the bandage on the shoulder of the same side as the wound. Carry the ends around the body and tie them, leaving one end long				
3. Carry the long end up and tie it to the point of the bandage on the shoulder				
4. When applying the bandage to the back, stand behind the patient and follow the same procedure as for the front of the chest				



# SKILL CHECKLIST

## Placing a Patient with a Possible Fracture of the Spinal Column on a Blanket

This checklist has two purposes:

- 1) Students should use it as a guide for checking their own skills or other students' skills.
- 2) Supervisors should use it when they evaluate how well students can place a patient with a possible fracture of the spinal column on a blanket.

After observing a student, enter a rating in the appropriate column.

Rating: 1 = Inadequate  
 2 = Needs improvement  
 3 = Satisfactory  
 4 = Above average  
 5 = Excellent

When placing a patient with a possible fracture of the spinal column on a blanket:

	YES	NO	RATING	COMMENTS
1. Collect the materials and equipment. At least three people are needed for this procedure				
2. Tell the patient what you are going to do				
3. Tie the patient's feet together with a figure-of-eight bandage. Bind the knees and thighs together				
4. Tell your assistants to keep firm control of the head and lower limbs. The head must be kept in the same position with the body all the time				

	YES	NO	RATING	COMMENTS
5. Roll the blanket lengthwise for half its width. Place the roll against the patient's body				
6. Slowly and gently turn the patient onto his side, away from the roll. Do not twist the head, legs, or trunk				
7. Move the rolled portion of the blanket up to the patient's back				
8. Turn the patient back over the roll of the blanket onto his opposite side. Then unroll the blanket				
9. Gently roll the patient onto his back again				



# SKILL CHECKLIST

## Placing a Patient on a Stretcher Using a Blanket and the Help of Six People

This checklist has two purposes:

- 1) Students should use it as a guide for checking their own skills or other students' skills.
- 2) Supervisors should use it when they evaluate how well students can place a patient on a stretcher using a blanket and the help of six people.

After observing a student, enter a rating in the appropriate column.

Rating: 1 = Inadequate  
2 = Needs improvement  
3 = Satisfactory  
4 = Above average  
5 = Excellent

When placing a patient on a stretcher using a blanket:

	YES	NO	RATING	COMMENTS
1. Collect materials and equipment. Six people are needed for this procedure				
2. Tell the patient what you are going to do				
3. Place the patient on the blanket				
4. Roll the blanket tightly to the patient's sides until it fits against his body				
5. Two persons kneeling opposite each other at the patient's shoulders grasp the blanket at the patient's shoulders and at the lower back. Two persons kneeling opposite each other at the lower end of the patient's				

YES NO RATING COMMENTS

body grasp the blanket at his hips and at his legs. just below the knee. The person in charge is to stand at the patient's head and hold the head, keeping slight traction on it				
6. The leader should instruct the assistants in advance so that they all work as a unit. The person with the stretcher should be prepared at the foot of the patient				
7. The person in charge gives the signal. The people holding the blanket must lean back at the same time, raising the patient about 15 cm. The sixth person slips the stretcher under the patient				
8. The patient's body must be supported so no part is allowed to bend or twist				



SKILL CHECKLIST

**Placing a Patient on a Stretcher  
with the Help of Four People But without  
Using a Blanket**

This checklist has two purposes:

- 1) Students should use it as a guide for checking their own skills or other students' skills.
- 2) Supervisors should use it when they evaluate how well students can place a patient on the stretcher without using a blanket.

After observing a student, enter a rating in the appropriate column.

Rating: 1 = Inadequate  
2 = Needs improvement  
3 = Satisfactory  
4 = Above average  
5 = Excellent

When placing a patient  
on a stretcher without  
using a blanket:

	YES	NO	RATING	COMMENTS
1. Collect materials and equipment. At least four people are needed for this procedure				
2. Tell the patient what you are going to do				
3. Tie the patient's feet together with a figure-of-eight bandage. Tie the knees and thighs firmly together				
4. The leader stands to one side of the patient, facing the patient's hips. The other three people stand on the other side of the patient. One person stands facing the patient's shoulders; one stands facing his knees; and one stands facing his hips, opposite the leader				

	YES	NO	RATING	COMMENTS
5. The leader kneels on his left knee and tells the others to also kneel on their left knees. All place their forearms beneath the patient				
6. The leader joins his right hand with the right hand of the assistant at the patient's hips, and his left hand with the left hand of the assistant at the head of the patient. With their free hands, the assistants support the legs and head				
7. The leader gives the order to lift. The patient is gently lifted and placed on the assistants' knees. The leader then places a stretcher under the patient				
8. The leader resumes his position. He joins hands again with his assistants. He then gives the order to lower the patient. All four gently lower the patient onto the stretcher				



## *Unit 8*

# **Sharing Ideas with Patients and a Community on the Prevention of Accidents**

### STUDENT GUIDE

#### OBJECTIVES

1. Identify safety messages that may be shared with patients, their families, and other community members.
2. Develop safety messages into simple terms that patients, their families, and other community members can understand.
3. Describe how the health worker can use these messages in his daily activities.
4. Develop lesson plans for school teachers on how to prevent accidents.
5. Share health messages with patients and others.

#### LEARNING ACTIVITIES

1. Discuss the use of health messages in helping community members prevent accidents.
2. Observe and discuss an instructor's presentation on how to develop a lesson plan to teach school children and how to share that plan with a school teacher.
3. With your working group, design a lesson plan on the subject of an assigned emergency condition.
4. With your working group, present your lesson plan to the rest of the class.
5. With a small group of fellow students, be on call at a hospital emergency room or health center during the evening to observe how emergency problems are handled.

## 8.1 PREVENTING ACCIDENTS

Accidents occur when people are careless or when they work or live in a dangerous place. Carelessness with dangerous equipment causes many kinds of accidents. Careless storing of drugs, cleaning agents, and other poisons also leads to many accidents involving children. Even familiar tasks such as lighting a stove in the house can cause an accident, if the person is careless.

People who work or live in dangerous places must guard against carelessness more closely than others. Children must learn not to play on busy streets. Men and women who work in mines or factories must learn the company's safety rules and follow them.

Most accidents can be prevented if people guard against them. You can help people guard against accidents by telling them about safety habits they might follow. You can also help people save lives by teaching them about first aid.

You can give these health messages in any of your clinic programs or visits to communities. But because children are most often involved in accidents, a good place to start teaching about safety is in the schools. You can ask teachers for time to teach the children about safety. Or you can work with the teacher, giving him the information and materials he will need to teach children about safety.

Following are two samples of lesson plans you might use to teach children about preventing accidents and giving first aid.

### Sample Lesson Plan for Teaching Students about First Aid

#### OBJECTIVES

After this presentation, students will be able to:

1. Explain how to prevent accidents.
2. Describe some of the symptoms and signs of common emergencies and trauma and how to bring the patient to a hospital or health center.



3. Carry out very simple first aid.

## METHODS

1. Discuss with students any accidents they might remember.
2. Ask students about why accidents occur more often among children than adults.
3. Discuss what a child can do if he witnesses an accident.
4. Use guest speakers and picture presentations to explain health messages.
5. Use role-plays to show how accidents can be prevented.
6. Divide the class into groups. Assign each group one common emergency or trauma and ask students to develop simple health messages that they could share with their parents and elders about it.
7. Tell a story about a person who had an accident and ask the students to explain how the accident could have been prevented.

## MATERIALS

1. Make a chart listing some common emergencies and traumas and their causes and consequences.
2. Make a list of common objects, substances, and situations that can cause emergencies and trauma.
3. Ask people who have recovered from emergencies and trauma to share their experiences and explain how they could have avoided the problem.
4. Ask a policeman, a mid-level health worker, a community health worker, and others in the community to share their emergency experiences with the students.
5. Write some simple health messages about preventing emergencies and trauma on cardboard or a flip chart.

## Sample Lesson Plan for Teaching Students to Prevent Poisoning

### OBJECTIVES

After this presentation, students will be able to:

1. Recognize how careful storing of poisons such as insecticides, kerosene, lyes, gasoline, medicine, and drugs will prevent poisoning of children and adults.
2. Recognize the early signs of poisoning from insecticides and kerosene.
3. Carry out simple steps to identify a poison and transport the patient to a mid-level health worker or the hospital.
4. Understand how poisoning can be prevented by being cautious and alert.

## METHODS

1. Discuss cases of poisoning.
2. Ask students about their attitudes toward poisoning and why poisoning occurs more often in children.
3. Describe the symptoms and signs of poisoning by insecticide, petroleum, and caustic substances.
4. Discuss the emergency care of a person suffering the effects of a poison.
5. Discuss how to safely store poisons and medicines.
6. Discuss how to present health messages about poisoning.

## MATERIALS

1. Chart showing pictures of poisons
2. List of poisons found in homes
3. Bottles used to store poisons
4. Patients or relatives of patients who have recovered from poisoning
5. Flip chart with health messages on how to store poisons
6. Written story about poisoning

## EVALUATION

1. Question the students twice on how much they remember.
2. Ask the students to report on how they have communicated what they learned to people in the village.



REVIEW QUESTIONS

**Sharing Ideas with Patients  
and a Community on the Prevention  
of Accidents**

1. What are some of the common traumas and emergencies that occur in a community?
2. What age group is most often affected by accidents? Why? Give an example.
3. List some kinds of dangerous living and work areas.
4. How will teaching school children about how to prevent accidents affect others?

## *Unit 9*

# **Assessing and Caring for Patients in Trauma and Emergencies; Skill Development**

### STUDENT GUIDE

#### OBJECTIVES

1. Interview and examine patients with life-threatening medical emergencies and traumas.
2. Provide care for patients in life-threatening medical emergencies and traumas.
3. Share health messages with patients and their families about the prevention and care of trauma and emergency problems.

#### LEARNING ACTIVITIES

1. With a small group of your fellow students, spend three and one half days in a hospital emergency room or health center. During this time, you will have the opportunity to:
  - Interview and examine patients
  - Provide patient care
  - Share health messages
2. Practice as many of the patient care procedures presented in this module as possible. Ask your supervisor to evaluate your performance.



## *Unit 10*

# **Caring for Patients in Trauma and Emergencies; Clinical Rotation**

### STUDENT GUIDE

#### ENTRY LEVEL

Before starting your clinical experience, you must:

1. Pass a test of your knowledge about trauma and emergency problems with a score of 80% or higher
2. Earn at least two Satisfactory ratings on how you:
  - Recognize and identify the signs associated with trauma and emergency problems
  - Take a medical history of a patient who has suffered trauma or who is in an emergency
  - Do a physical examination of a patient with an emergency or trauma problem
  - Give a patient advice about emergency or trauma problems
  - Present health messages about trauma and emergency problems

#### OBJECTIVES

1. Diagnose all trauma and emergency problems described in this module.
2. Record information about the medical history, physical examination, and patient care for emergency and trauma problems.
3. Demonstrate the ability to decide when to discontinue the history taking and physical examination and give emergency treatment to the patient with an emergency trauma problem.
4. Provide correct patient care using treatments described in this module and Patient Care Guides.

5. Advise patients and their families about home care and prevention of emergencies and trauma.

## LEARNING ACTIVITIES

You will provide patient care, under supervision, for one week in a hospital emergency room or health center. During that time, your supervisor will help you identify and treat emergencies and trauma problems. You will be expected to use the Diagnostic and Patient Care Guides. You will also practice patient care skills learned in class.

## EVALUATION Level II

When you feel that you have had enough experience, ask your supervisor to evaluate you. He will do this using a logbook. This logbook lists the problems you may see in a hospital ward or emergency room. It also shows you how many patients with emergency and trauma problems you should see. As your supervisor watches you deal with the problem, he will write his rating in the logbook. He will rate you in the following way for diagnosis and patient care.

1 = Diagnosis incorrect

2 = Diagnosis correct, treatment incorrect

3 = Diagnosis and treatment correct, but no patient advice given

4 = Diagnosis, treatment, and patient advice correct

You will be expected to get a 4 rating.



During your clinical experience, you will be expected to get a Satisfactory rating on your skill in doing as many of these procedures as possible in one week. Remember that you may also ask to be evaluated on these procedures during your three and one half days of skill development. The procedures are:

- Starting an intravenous infusion in a peripheral vein
- Removing a foreign body from a person's throat with your fingers
- Using back blows to clear a child's blocked airway
- Using manual thrusts to clear an adult's blocked airway
- Performing mouth-to-mouth respiration
- Applying a pressure dressing
- Using a tourniquet to control bleeding
- Cleaning lacerations
- Giving a local anesthetic
- Removing dead tissue from a wound
- Suturing superficial lacerations using a simple, interrupted stitch
- Applying a triangular bandage to hold dressings to a shoulder, hip, or groin
- Applying a triangular bandage to hold dressings to an elbow or knee
- Applying a triangular bandage to hold dressings to a hand, foot, or stump
- Splinting a fractured upper arm
- Splinting a fractured forearm or wrist
- Splinting a fractured shoulder blade
- Splinting a fractured collar bone
- Splinting a fractured upper leg

Splinting a fractured lower leg

Splinting a fractured kneecap

Splinting a fractured ankle or foot

Using a triangular bandage to make an arm sling

Restoring a dislocated shoulder

Bandaging a sprained joint

Applying a triangular bandage to the scalp and head

Applying a triangular bandage to the chest or back

Placing a patient with a possible fracture of the spinal column on a blanket

Placing a patient on a stretcher using a blanket and the help of six people

Placing a patient on a stretcher with the help of four people but without using a blanket



## *Unit 11*

# **Helping a Community Prevent and Care for Traumas and Emergencies; Community Phase**

### **STUDENT GUIDE**

#### **ENTRY LEVEL**

Before you start your community experience, you must:

1. Score at least 80% on a test of your knowledge about emergency and trauma problems.
2. Complete one week of clinical experience in a hospital ward or emergency room.
3. Score a rating of 4 on diagnosis, treatment, and patient advising for each of the problems you see during the clinical rotation.
4. Earn Satisfactory ratings on as many of the patient care skills in this module as possible.
5. Earn Satisfactory ratings on methods of teaching community health workers.
6. Earn Satisfactory ratings for presenting community health messages.

#### **OBJECTIVES**

1. Provide clinical services to people who suffer from emergency and trauma problems.
2. Identify common emergency and trauma problems in the community and plan a program to prevent them from occurring. Or when these problems occur, prevent a delay in getting treatment for the patients.
3. Advise the community about its role in preventing emergency and trauma problems and create an awareness of the importance of prompt treatment.



4. Identify other members of the health team or community who can assist in prevention.

## LEARNING ACTIVITIES

Your community experience will last three months. During that time, in addition to providing clinical services, you should:

1. Survey the community and identify the most common emergency and trauma problems.
2. Identify any local customs, machinery, types of work situations, and natural situations that increase or decrease the occurrence of emergency and trauma problems.
3. Meet with community members and obtain their help in preventive activities.
4. Prepare a community health worker to assist you in community education.
5. Conduct training sessions with school teachers, helping them prepare lesson plans to teach school children about the prevention of common emergency and trauma problems.

## EVALUATION Level III

During your community experience, your supervisor will evaluate you. To do this, he will use the standards set out in the community experience logbook.







**The MEDEX Primary Health Care Series**  
**University of Hawaii**

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